CUY-90-15.45

6-0

STATE OF OHIO
DEPARTMENT OF HIGHWAYS

UI-1057(4)

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

1 / 43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50

PART 2

CUY - 42R - 17.50
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU-42R-175
CUYAHOGA COUNTY
CITY OF CLEVELAND
PART 2 SUBSTRUCTURE

THIS IMPROVEMENT HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR OF HIGHWAYS IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 REVISED CODE OF OHIO.

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12,13 EXISTING CONDITIONS AT PIER LOCATIONS 36A REVISED SHEET no. 36
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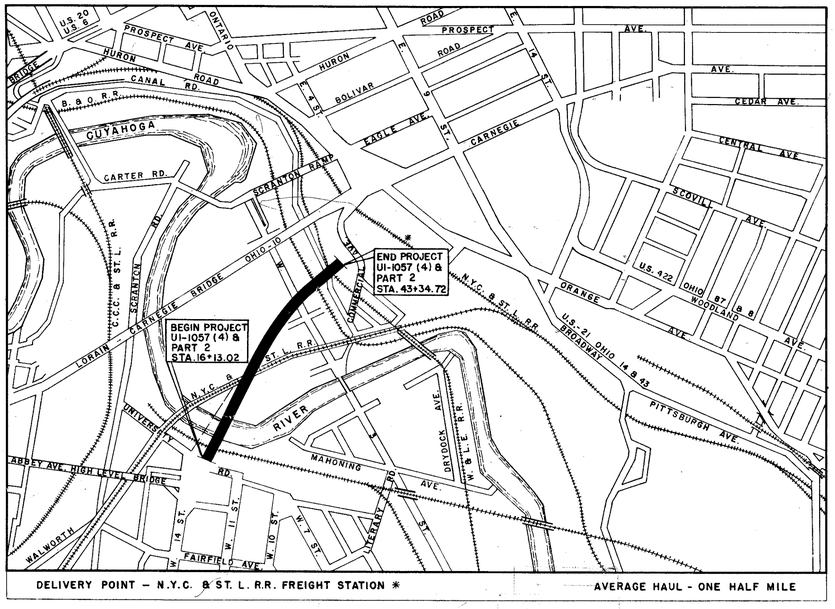
10,11,35 R. R. FORCE ACCOUNT WORK

LINE DATA

BEGIN PROJECT	UI-1057 (4)	STA. 16 + 13.02
END PROJECT	UI-1057 (4)	STA. 43 + 34.72
NET LENGTH	UI-1057 (4) AND WORK	2,721.7 LIN. FT. or 0.515 MILES



DELIVERY POINT — N.Y.C. & ST. L. R.R. FREIGHT STATION *

AVERAGE HAUL - ONE HALF MILE

LOCATION PLAN

N

0 400 800 1600 2400

SCALE IN FEET

PORTION TO BE IMPROVED

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF HIGHWAYS, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH IN THE PLANS AND ESTIMATE.

THE RIGHT OF WAY FOR THIS IMPROVEMENT WILL BE PROVIDED BY THE STATE OF OHIO.

APPROVED Louis L. Drasler
DATE 9-2-54 DIRECTOR OF PUBLIC SERVICE, CITY OF CLEVELAND

APPROVED Arthur A. Endres
DATE 9-2-54 DIVISION DEPUTY DIRECTOR

APPROVED John J. Heuerlest
DATE 9/14/54 DEPUTY DIRECTOR OF PLANNING AND PROGRAMMING

APPROVED Richard Smith
DATE 9-8-54 ENGINEER OF BRIDGES

APPROVED
DATE ENGINEER OF LOCATION & DESIGN

APPROVED H. T. Brandt
DATE 9-10-54 DEPUTY DIRECTOR OF DESIGN & CONSTRUCTION

APPROVED H. C. Schmidlin
DATE 9-14-54 FIRST ASSISTANT DIRECTOR

APPROVED D. J. Ingall
DATE 9-15-54 DIRECTOR OF HIGHWAYS

PRINT APPROVED BY B. Blowers
DATE 8-31-54 CHIEF ENGINEER, ERIE RAILROAD

PRINT APPROVED BY F. H. Simpson
DATE 8-31-54 CHIEF ENGINEER, NEW YORK CENTRAL SYSTEM

APPROVED
DATE CHIEF ENGINEER, NEW YORK, CHICAGO AND SAINT LOUIS RAILROAD CO.

PRINT APPROVED BY K. J. Wagoner
DATE 9-2-54 CHIEF ENGINEER, BALTIMORE AND OHIO RAILROAD

SUPPLEMENTAL SPECIFICATIONS			
NUMBER	DATE	NUMBER	DATE
CE-107	5-21-53		
T-171.19	R. 3-19-53		
M-101.7	1-24-53		

STANDARD DRAWINGS			
NUMBER	DATE	NUMBER	DATE
* I-8 MH No. 1	5-1-52		
* G-7.07	1-2-53		
** I-8 MH N°1-A	6-1-54		
I-1,2,3,4 & 5	2-20-45		

* Accepted. ** Submitted to B.P.R. for approval.

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DISTRICT ENGINEER DATE

HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

H. G. SOURS
ASSOCIATE
COLUMBUS

00077

FILE NO.	CUYAHOGA COUNTY
	SEC
	DATE OF LETTING _____, 195__
	CONTRACT NO. _____

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	
2	OHIO	UI 1057 (4)		2 / 43

ESTIMATED QUANTITIES

ITEM	DESCRIPTION	TOTAL	UNIT	PIER 1		PIER 2		PIER 3		PIER 4		PIER 5		PIER 6		PIER 7		PIER 8		WEST END PIER		EAST END PIER		STRUCTURE REMOVAL	SEWER SYSTEM	PROJECT IN GENERAL
				1N	1S	2N	2S	3N	3S	4N	4S	5N	5S	6N	6S	7N	7S	8N	8S	WN	WS	EN	ES			
E-2	Cofferdams, Cribs and Sheeting	20	Each	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
E-2	Unclassified Excavation	17,227	Cu. Yds.	1,395	1,419	829	816	975	1,035	802	975	829	916	829	829	776	975	1,150	776	543	610	355	393			
S-1	Class "E" Concrete, Footings	6,098	Cu. Yds.	395.6	395.6	308.0	351.3	395.4	395.4	308.0	395.7	308.0	395.7	308.2	308.0	308.0	395.7	307.9	307.9	125.1	125.1	123.0	140.4			
S-1	Class "E" Concrete, above Footings	5,171	Cu. Yds.	177.7	177.7	259.8	259.8	267.6	267.6	275.3	273.6	285.9	285.9	270.2	270.2	265.1	265.1	184.6	184.6	288.5	170.6	370.6	370.6			
S-4	Reinforcing Steel CO-1&2	~~1,393,558~~ 1,399,848	Lbs.	78,627	78,627	79,962	75,499	83,018	83,018	81,411	85,231	82,639	86,592	80,941	80,941	80,532	84,485	74,470	74,470	26,237	16,910	27,980	31,968			
S-7	Structural Steel CO-17	~~29,148~~ 28,000	Lbs.	1,649	1,649	1,575	1,575	1,617	1,617	1,617	1,622	1,608	1,608	1,608	1,617	1,608	1,608	1,449	1,449	842	847	926	1,057			
S-7	Wrought Iron Ladder Rungs CO-17	~~7,021~~ 8425	Lbs.	280	280	399	399	406	406	413	413	427	427	427	427	413	413	280	280	224	119	294	294			
S-8	Field Painting of Structural Steel 2 Coats		Lump Sum																							
S-9	½" Sponge Rubber Expansion Joint Material Sec. M-10.02	716	Sq. Ft.	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	25.0	25.0	25.0	25.0			
S-17	First Pile Test Load		Lump sum																							Lump Sum
S-17	Subsequent Pile Test Loads CO-4&11	9 ~~5~~	Each																							5
S-18	Steel Bearing Piles (12 BP 53) CO-8	~~4,680~~ 4570	Lin. Ft.																	2,400	2,280					
S-18	14" Cast-in-place Reinforced Concrete Piles CO-5,6,8,&13	~~113,045~~ 128,491	Lin. Ft.	7,740	7,740	7,290	7,200	8,100	8,100	7,290	7,740	6,885	7,310	6,160	6,480	5,670	6,020	4,860	4,860			1,680	1,920			
S-24	Removal of Existing Structure No. 1		Lump sum																					1		
S-24	Removal of Existing Structure No. 2		Lump sum																					1		
S-24	Removal of Existing Structure No. 3		Lump sum																					1		
S-24	Removal of Existing Structure No. 4		Lump sum																					1		
S-24	Removing Existing Concrete Pedestals which Interfere with New Construction		Lump sum																							Lump Sum
S-25	Electrical Grounds		Lump sum																							Lump Sum
S-29	8" Wrought Iron Pipe, Including Specials	1,036	Lin. Ft.	33	33	59	59	59	59	61	61	63	63	61	61	60	60	45	45	39	22	45	48			
I-2	8" Pipe for Storm Sewers	6	Lin. Ft.																						6	
I-2	12" Pipe for Storm Sewers	1,333	Lin. Ft.																						1333	
I-2	12" Pipe for Storm Sewers under Pavement	251	Lin. Ft.																						251	
I-2	15" Pipe for Storm Sewers	335	Lin. Ft.																						335	
I-2	15" Extra Strength Reinforced Concrete Culvert Pipe Sec. M-6.6 (c) for Storm Sewers	288	Lin. Ft.																						288	
I-2	18" Pipe for Storm Sewers under Pavement	80	Lin. Ft.																						80	
I-2	21" Pipe for Storm Sewers	142	Lin. Ft.																						142	
I-2	24" Pipe for Storm Sewers	932	Lin. Ft.																						932	
I-2	24" Extra Strength Reinforced Concrete Pipe Sec. M-6.6 (c) for Storm Sewers	290	Lin. Ft.																						290	
I-2	24" Pipe for Storm Sewers Under Pavement	(116) 84	Lin. Ft.																						(116) — 84	
I-2	24" Paved Bituminous Coated Corrugated Metal Pipe, Sec. M-6.4 (d) for Storm Sewers	(60) 90	Lin. Ft.																						(60) — 90	
I-2	27" Paved Bituminous Coated Corrugated Metal Pipe, Sec. M-6.4 (d) for Storm Sewers	60	Lin. Ft.																						80	
I-2	36" Extra Strength Reinforced Concrete Culvert Pipe Sec. M-6.6 (c) for Storm Sewers	30	Lin. Ft.																						30	
I-5	Pipe Special, 12" 35° Wye	1	Each																						1	
I-5	Pipe Specials, 8" to 12" Increaser	16	Each																						16	
I-5	Pipe Specials, 8" to 15" Increaser	2	Each																						2	
I-8	Manholes, Standard No. 1	16	Each																						16	
Spec.	Outlet Structure "C"		Lump sum																							
I-8	Alteration to Manhole "A"		Lump sum																							
I-8	Alteration to Manhole "B"		Lump sum																							
I-8	Alteration to Manhole "C"		Lump sum																							
I-8	Alteration to Manhole "D"		Lump sum																							
I-8	Alteration to Manhole "F"		Lump sum																							
Spec.	Outlet Structure "A"		Lump sum																							
Spec.	Outlet Structure "B"		Lump sum																							
I-16	Removal of Manhole "E"		Lump sum																							

SUPPORT FOR ERIE RAILROAD TRACKS

ITEM	DESCRIPTION	TOTAL	UNIT
E-1 & Spec.	Roadway Excavation	5,940	Cu. Yds.
E-4 & Spec.	Borrow	3,000	Cu. Yds.
S-1	Class "E" concrete, anchor caps	73	Cu. Yds.
S-4	Reinforcing steel in anchor caps	7,900	Pounds

ITEM	DESCRIPTION	TOTAL	UNIT
S-7 & Spec.	Steel sheet piling including reinforcing plate, steel H anchor piles and steel wales, and timber connection angles, for dock wall CO 3, 3&9	~~877,000~~ 1,170,345	Pounds
S-7 & Spec.	Steel anchor rods, turnbuckles, pipe sleeves and fastenings for dock walls (including payment for necessary excavation, sheeting and bracing) CO 9	~~43,000~~ 33,260	Pounds
S-13	Creosoted timber fenders for dock wall, including hardware	2.40	M.B.M.
Special	Temporary timber crib wall	1,965	Sq. Ft.

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50

CONTINUATION OF GENERAL NOTES (From Sheet 3)

32. PILING (Continued from Sheet 3)

An effort shall be made to avoid great differences in the penetrated length of the individual piles in a footing. In striving for additional penetration, beyond 65 tons, piles of relatively short penetration shall be driven to a greater rate of blows-per-foot than longer piles.

The Contractor shall submit to the Engineer, at least 15 days before the beginning of pile driving, for approval by the Director, a plan showing the order in which he proposes to drive the piles in a footing. It is intended that the piles nearest the middle of the footing be driven first, to insure as great penetration for them as for the outer piles, after which successive outer piles will be driven.

PENCIL REVISIONS
SEPT. 20, 1955

Revised As-Built DLM. 12/31/57

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

QUANTITIES

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE GA DATE 6-22-54
TRCD. AH DATE 6-22-54
CKD. JGS DATE 7-9-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 1.02

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	3 / 43
2	OHIO	UI 1057 (4)		

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CUY-42R-17.50 CENTRAL VIADUCT

1. DESIGN SPECIFICATIONS

"Design Specifications for Highway Structures", State of Ohio Department of Highways dated October, 1951 revised July 15, 1952 and April 1, 1954 (with a load frequency rating of CF 1200-S1) are used in the design of this project.

2. CONSTRUCTION SPECIFICATIONS

"Construction and Material Specification", State of Ohio, Department of Highways, dated January 1, 1953, as modified by notes on the plans and in the proposal, shall govern.

3. SCOPE OF CONTRACT

Work scheduled in this contract consists of the construction of two end piers, piers 1 through 8, the construction of storm sewers, a 200' dockwall section, railroad roadbed grading, the removal of certain fenders and two existing piers from the river, and removal of some of the masonry pedestals of the former Central Viaduct. The steel superstructure of the former Central Viaduct has been removed but the masonry substructure remains in place. All track work will be handled by railroad forces. Railroad grading and cribwall construction in the vicinity of Pier 1 will be done by the contractor.

4. MINIMUM TEMPORARY CONSTRUCTION CLEARANCE FOR RAILROAD TRACKS

The minimum temporary construction clearance for railroad tracks shall be 21' - 0" vertically above top of rail and 8' - 0" horizontally from the centerline of the nearest track.

5. REOPENING OF STREETS

When any street is closed to traffic, and not then permanently closed, work on that particular street shall be prosecuted to the fullest to allow for its reopening as soon as possible. Existing streets adjacent to the project shall remain open as long as possible.

6. FIELD OFFICE

The contractor shall provide a suitable field office in accordance with sec. S-0.01(b) having a minimum of 300 sq. ft. of floor space. The contractor shall have a telephone installed and maintained for the duration of the contract.

7. WORK BY THE CITY - OF CLEVELAND

Within the corporate limits of the city of Cleveland the city will perform any pavement repair due to sewer construction and will seal and fill (by mud jack) the existing sewers that are to be abandoned.

The city will also wreck and remove certain existing buildings within the limits of the easement lines. The city will wreck the buildings to the ground line or tops of foundations near the ground surface, or to the top of the existing cellar foundations and remove all the resulting debris.

8. RAILROAD TRAFFIC

Portions of this project shall be constructed under traffic, and the contractor, to the satisfaction of the engineer, shall plan and conduct his operations so that traffic shall be maintained as herein specified.

At piers 1, 3, 4 and 5 construction operations will interfere with traffic on existing railroad tracks. The tracks will, in some cases, be relocated by the owners, and in other cases will be removed. Temporary trestles may be constructed to span across footing excavations, and the contractor shall coordinate his construction operations so as to interfere the least possible amount with train movements. Flagmen and watchmen shall be supplied as required by the railroads, at the expense of the contractor.

9. BLASTING

Where blasting is necessary, the contractor will be required to take all necessary precautions to protect the work already completed and the adjacent property and he shall be responsible for any and all damage to the work or to adjacent property and injury to persons.

10. BORINGS

The log of each of the test hole borings is shown on these plans.

11. PILING (See also No. 31 on this sheet and No. 32 on Sheet 2.)

The piles in the west end pier shall be 12BP53 steel bearing piles, and in Piers 1 through 8 and in the east end pier 14" cast-in-place reinforced concrete piles.

Preliminary test piles were driven at this site and loaded. A copy of the report on this test pile project may be inspected by bidders in the Division Office of the Department of Highways at Cleveland or in the Bureau of Bridges at Columbus. Copies of this report will be made available to the Contractor for this substructure project and to the engineering personnel, and should be consulted as a guide in the driving of the piles.

A first pile test load shall be applied where directed by the engineer. Subsequent test loads shall be applied if and where directed by the Engineer. The Engineer may direct a subsequent load to be applied on the same pile as a previous load or on another pile in the same footing or in a different footing. The maximum amount of load required shall be equal to 3R unless the "yield point" is reached at a lesser tonnage. The purpose of this test-loading (in addition to that done in the preliminary test pile project) is to calibrate the capacity formula and determine the required number of blows per foot for the actual driving conditions which exist during construction (with respect to the type and size of hammer and the type, section and driven length of the pile) and/or to calibrate the formula for some locations which were not checked in the preliminary test pile project.

The nominal design capacity is 65 tons. The capacity formula shall be adjusted (according to test loading indications) to determine the number of blows per foot required to provide an "R" of 65 tons (that is, a "yield point" of 130 tons). After this rate of blows per foot has been attained, driving shall be continued to cause each pile to penetrate to an average penetration of 15 feet per pile beyond the greatest length of penetration at which the rate of blows per foot for an R of 65 tons has been observed. However, this additional driving (beyond 65 tons) shall be stopped if damage to a pile becomes apparent. The total penetration per pile at the west end pier shall be not less than 60 feet, and at Piers 1 thru 8 and at the east end pier not less than 40 feet.

The hammer used shall have an energy rating of not less than 15,000 ft#, and the type and size of hammer used when the required length of penetration to provide an R of 65 tons is being attained shall be the same as used in the driving of the pertinent test-loaded pile.

The average length of the piles is estimated as follows: West End Pier, 60 Feet; Pier 1, 90 feet; Pier 2, 90 feet; Pier 3, 90 feet; Pier 4, 90 feet; Pier 5, 85 feet; Pier 6, 80 feet; Pier 7, 70 feet; Pier 8, 60 feet; and East End Pier, 40 feet.

12. DISPOSAL OF SURPLUS EXCAVATION

The contractor shall be responsible for the disposal of any surplus excavation outside the limits of the right-of-way at his own expense.

13. UTILITIES

Except as hereinafter provided any utility facilities encountered at the site of the work which will interfere with the construction of the substructure units included in this contract will be removed or relocated by others. The contractor shall coordinate his operations with the work of the utility owners, or others who may be making the relocations, and shall notify the owners of the utilities of his schedule sufficiently in advance to permit them to make the necessary alterations.

14. INTERFERENCES WITH CONSTRUCTION

VICINITY OF WEST END PIER

University Road near the west end pier will be temporarily closed to traffic. No utilities are known to exist which would interfere with pier construction.

VICINITY OF PIER 1

Pier 1 is located in the Erie Railroad yards southwest of the Cuyahoga River. Track relocation will be coordinated by the railroad company and the contractor during sewer, dockwall, roadbed and pier construction. See Note 30.

VICINITY OF PIER 2

The concrete drain trough from the wash stalls of the Goff-Kirby Ready-Mix Plant is to be reconstructed by the owners to clear the pier shafts.

Existing concrete pedestals of the old Central Viaduct which fall within the limits of footing 2N are to be removed by the Contractor before Pier 2N can be built.

VICINITY OF PIER 3

C.C.C. & St. L. Tracks will be relocated by the owners until the pier is completed. Truck wash stalls will be removed by the owner and rebuilt after pier construction is completed. One existing concrete pedestal of the old Central Viaduct must be removed by the contractor before Pier 3 can be built.

VICINITY OF PIER 4

One existing pedestal of the old Central Viaduct must be removed by the Contractor before Pier 4N can be built. One track of the C.C.C. & St. L. will be relocated by the owners prior to the beginning of construction.

VICINITY OF PIER 5

C.C.C. & St. L. tracks will be temporarily relocated by the Railroad Co. prior to the beginning of construction, at the site of Pier 5S. A temporary trestle will be constructed by the Railroad Co. to bridge the C.C.C. & St. L. track over the corner of the excavation for Pier 5N. This work will be done prior to beginning construction at this site. The contractor's operations in excavating and pile driving must be coordinated with train movements on the C.C.C. & St. L. Track. Two existing pedestals of the old Central Viaduct must be removed by the contractor before Pier 5N can be built.

Track will be relocated by the railroad company as shown on Sheet 11

VICINITY OF PIER 6

One concrete pedestal of the old Central Viaduct must be removed by the contractor prior to beginning construction of Pier 6N. Pier 6S will be built on the site of a two story brick building owned by the United Garage and Service Corporation. The building will be removed by the City to the floor level. There is no basement but has a concrete floor with a lower level on the west side, roughly 15 ft by 40 ft. about 4 ft below the ground level. Two 10,000 gallon tanks and one 2,000 gallon tank are located below the floor and encased in concrete. The amount of encasement is not known. Plans for this structure are available for review by bidders at the Division Office of the Department of Highways at Cleveland, Ohio.

VICINITY OF PIER 7

An existing one story brick and frame building with a concrete floor at the site of Pier 7N will be removed by the City prior to the beginning of construction. Foundations and floor of this building shall be removed by the contractor and payment therefor will be made under "Item E-2, Unclassified Excavation." Manhole No. E in West 3rd Street and the existing 18" brick sewer shall be removed and rebuilt by the Contractor as shown.

VICINITY OF PIER 8

One and two story brick buildings interfering with the construction of Pier 8 will be removed by the city prior to beginning construction. Foundations are sandstone blocks about 16 inches thick. Basements and stacks are at one level about 8 feet below ground on the street side and open to the same level as the ground on the south side. Foundations and any other underground constructions connected with the buildings shall be removed by the contractor as "Item E-2, Unclassified Excavation." 4-inch and 8-inch gas lines crossing the location of Pier 8S will be removed by the owners when so notified by the contractor.

VICINITY OF EAST END PIER

No attempt will be made to salvage materials of an existing 12" sewer line crossing the location of the north footing. This sewer will be abandoned and a by-pass constructed as described elsewhere. No other utilities are known to interfere with pier construction.

15. REMOVAL OF ABANDONED PIERS AND PEDESTALS OF FORMER CENTRAL VIADUCT

Seven masonry pedestals of the former Central Viaduct interfere with construction of piers 2N, 3N, 4N, 5N and 6N. They shall be removed to at least one foot below the surface of the ground. Payment therefor will be made as a lump sum, "Item S-24, Removing Existing Concrete Pedestals which Interfere with New Construction." Removal of that portion of the pedestals below a point one foot below the surface of the ground shall be included in the unit price bid for "Item E-2, Unclassified Excavation," for the respective pier footings.

Two piers of the former Central Viaduct in the Cuyahoga River are partially within the limits of the established dock lines. Plans for these piers are shown on Sheet 9. All portions of the pier walls shall be removed down to Elevation 576.0 and all masonry, concrete, timber, steel and piling shall be removed riverward of the established docks lines to Elevation 540.5. Also, piles below this elevation shall be extracted except portions which break off in extracting. Payment for the removal of Structure No. 1 shall be "Item S-24, Removal of Existing Structure No. 1" and payment for the removal of Structure No. 2 shall be "Item S-24, Removal of Existing Structure No. 2."

16. REMOVAL OF EXISTING FENDERS

(out. Prints are available for reference, in Cleveland.

Steel pile fenders (Structures Nos. 3 and 4) are to be removed from the Cuyahoga River to Elev. 540.5. Construction plans for these fenders are not available. Payment for the removal of these fenders shall be the lump sum bid price for "Item S-24, Removal of Existing Structure No. 3," and "Item S-24, Removal of Existing Structure No. 4."

17. BRIDGE DRAINAGE AND STORM SEWER SYSTEM

Roadway drainage will be conducted thru pipes and flumes to the tops of the piers by others, in a subsequent contract. The Contractor will place wrought iron pipes within the pier shafts extending to points below the ground surface where horizontal wrought iron pipes extend thru and 1'-0" outside the pier shaft walls. Connection of these drainage pipes is made thru sewer pipe increasers to the storm sewer laterals. At the west end pier, a lateral from the SW End Pier Shaft connects to and the NW End Pier drainage empties through a short section of 8" sewer pipe into new manhole No. 13 near the north shaft. A new sewer extends and connects to existing manhole "A". At Pier 1, laterals will be connected to an existing manhole "B". A 12" Y pipe special will connect both laterals to a single drop pipe. Manholes "A" and "B" are on an existing No. 7 brick sewer running approximately parallel to the bridge center line and emptying into the Cuyahoga River. On this sewer line, about Sta. 18+76, existing manhole "C" shall be removed to elev. 585.0 and the opening covered with a 10" thick concrete slab. Eastward to the Cuyahoga River, the existing 12" cast iron sewer line shall be replaced by a 36" reinforced concrete pipe and outfall structure "C". A new storm sewer nearly parallels the bridge center line from East bank of the Cuyahoga River to Pier 5. Laterals extend from each pier shaft to manholes Nos. 1, 2, 3 and 4 on the new sewer line near Piers 2, 3, 4 and 5 respectively.

Laterals from each shaft of Pier 8 connect into a new manhole No. 6 about Sta. 39+75, on a 15" sewer line from manhole No. 5 in Third Street, about Sta. 36+95. Laterals from the shafts of Pier 7 also connect to manhole No. 5. The existing 18" brick sewer is to be removed and detoured around Pier 7 North footing. Existing manhole "E" is to be abandoned. A new storm sewer shall be built on Third Street, from manhole No. 5 Southeast to the Cuyahoga River. A lateral from the north shaft of Pier No. 6 runs to new manhole No. 12 into which the south shaft drainage empties through a short section of 8" sewer pipe. A new 12" sewer connects new manhole No. 12 to new manhole No. 8 in Harrison Street, (about Sta. 35+00). A new 12" sewer shall be built connecting manhole No. 8 with manhole No. 9 on the new Third Street sewer line.

On Third Street, at the north side of Stones Levee, manhole No. 16 shall be built on the new Third Street sewer line, and connection made to the existing catch basin at the N. E. corner of the street intersection, using the existing material. See Sheet 36.

At the east end pier, laterals from the pier shafts connect into new manhole No. 7 at Sta. 43+00. A 12" sewer shall be built from manhole No. 7 to the existing manhole "D" on an existing No. 4 sewer in Commercial Road.

The Contractor shall build manholes No. 14 and No. 15 with the connecting sewer lines, near the east end Pier, to reroute an existing 12 inch sewer around the location of the north pier footing. See Sheet 36.

All wrought iron drainage pipes inside the piers, with couplings and specials, shall be standard weight and conform to Section M-6.10, "Welded Wrought Iron Pipe." ASTM designation A72. Joints may be threaded, welded, or have bolted flanges, or have any combination thereof.

The proposed elevations and locations of catch basins, manholes, and sewer pipes, and the estimated lengths of pipes may be adjusted by the Engineer during construction, as per Section 1-2.03.

Payment for the above drainage and storm sewer system will be made as follows: For the wrought iron pipes from the top of pier shafts to the connection to sewer laterals below ground, a unit price per linear foot for "Item S-29, 8" Wrought Iron Pipe, Including Specials." For the laterals and pipes of the drainage system from the pier shafts to the manholes or outlet structures at the Cuyahoga River, a unit price per linear foot for "Item 1-2, (size) inch pipe for Storm Sewers", (with a separate bid price for each size listed); "Item 1-2 (size) inch Pipe for Storm Sewers under Pavement"; "Item 1-2, (size) inch Extra Strength Reinforced Concrete Culvert Pipe, Sec. M-6.6(c) for Storm Sewers"; "Item 1-2 (size) inch Paved Invert Corrugated Metal Pipe, Sec. M-6.4(d) for Storm Sewers; "Item 1-8 Each, Standard No. 1 Manholes"; Lump Sum , Alteration to Manhole "A", "B", "D", or "F"; Lump sum, "Outlet Structure "A", "B", or "C"; "Item 1-5 Pipe Specials", (description). The specials shall conform to the same strength class as the adjoining sewer. For payment purposes, each special shall be considered as having a length of 3 feet.

18. EXISTING PIPE AND UTILITIES

The location, size and depth of all existing pipe and utility appurtenances represent the best information obtainable at the time of survey, but the State of Ohio does not guarantee the correctness thereof.

19. CONCRETE

Concrete shall be Class "E".

At least 15 days before concrete form construction is begun, the contractor shall submit to the Engineer for approval by the Director, a plan showing where he proposes to place construction joints and showing the extent and sequence of individual pours. The concrete shall be placed in one continuous operation between the construction joints that have been proposed and approved. Construction joints shall be so located and arranged as to least impair the strength and appearance of the concrete, and to reduce shrinkage stresses to a minimum.

The concrete in shoe seat areas shall be finished 1/8 inch to 1/4 inch high and ground down to the elevations shown.

20. BAR CLEARANCES

The clearance between reinforcing bars and the surface of the concrete shall be 3 inches for the footing bars and 2 inches for the horizontal bars in the pier shafts.

21. REINFORCING BAR SIZE

The first digit in the bar mark if there are three digits, and the first two if there are four, indicates the bar size number.

22. MISCELLANEOUS METAL

Anchor bolts, nuts, washers, anchor bolt frames, doors, door frames, hand hold pipes in door openings and all fasteners for wrought iron pipes within the pier shafts, shall be structural carbon steel, ASTM-A-7. Payment will be made by the pound on the computed weight in pounds as bid for "Item S-7, Structural Steel."

The ladder rungs shall be wrought iron and will be paid for at the price per pound bid for "Item S-7, Wrought Iron Ladder Rungs."

23. WELDING

All welding shall be class "A". - See section S-7.22.

24. DIMENSIONS

Dimensions given are measured horizontally and at 60° F.

25. DATUM PLANE FOR ELEVATIONS (See I.O.C. 11/26/54 H.R. Craig)

All elevations pertaining to the dock walls are shown in feet above mean tide at New York. All other elevations are regional geodetic survey datum. Elevation 570.50 above mean tide at New York City equals elevation 570.07 Cleveland regional geodetic survey datum.

26. MAINTAINING AND SAFEGUARDING TRAFFIC

The contractor shall provide for the maintaining and safeguarding of traffic on all of the streets and drives immediately beyond the ends of this project and within the limits of this project, that are affected by his operations, in accordance with the provisions of Sec. G-7.07 and Sec. G-4.05. Payment therefor will be made in the lump sum price bid for "Maintaining and safeguarding traffic, including lights, signs, barricades and watchmen".

27. ELECTRICAL GROUNDS

A solid No. 6 bare copper wire electrical ground shall be embedded in the concrete of all pier shafts. The wire shall be brazed to a concrete pile casing or a steel H pile at its lower end, and its upper end shall extend sufficiently above the top of the concrete to provide for a suitable splice and extension for connection, by the contractor for the superstructure. Payment therefor will be made at the lump sum price bid for "Item S-25, Electrical Grounds."

28. COFFERDAMS, CRIBS AND SHEETING

Cofferdams, cribs and sheeting shall be paid for per unit of cofferdam per pier shaft, with all work to be done according to Item E-2. Any cofferdams, cribs and sheeting associated with the construction reconstruction and removal of parts of the sewer system, and the removal of existing structures, shall be considered as paid for in the prices bid for such construction and removal.

29. SHEET PILE DOCKWALL

The proposed 200 foot dockwall section in the vicinity of Pier 1 requires that structure will be removed before construction can be completed. The proposed dockwall shall consist of a front wall and anchor piles connected with tie rods. The front wall is located with the face of the timber fenders at the established dock line.

The existing 3 inch high pressure gas line will be raised or lowered as required by the utility company.

The cost of any excavation, sheeting and bracing incidental to the installation of the dockwall items shall be included in the price bid for the respective items.

The sheet piling shall be U. S. Steel section WZ-38 or Bethlehem section ZP-38 or approved equivalent. Fabricated connections shall be of size and strength to correspond with the rolled members. The fabricated members may be built up by either welding or riveting. Steel for sheet piling shall be in accordance with Sec. M-7.4(c).

The driving of a sheet pile, if directed by the Engineer, shall be stopped before the top of the pile reaches the required elevation, to permit cutting off of metal that is deformed due to driving. Such cutting shall be neatly done to a straight line. Defective piles shall be removed and replaced. A pile shall be considered defective if injured to an extent that would reduce the strength of its section more than 20 percent.

The penetration of the sheet piles shall be such as to reach the elevations shown unless obstructions are encountered. In case obstructions, such as boulders or large stones, prevent the penetration of a sheet pile at least to Elev. 537.0, such obstructions shall be removed.

The vertical steel H anchor piles shall be 12 BP 53 except where otherwise shown on the plans and the battered pile 14 BP 73. The vertical piles shall be driven to a capacity of 40 tons and the battered piles to a capacity of 60 tons. The pile driving shall be governed by Item S-18.

The sheet piling will be paid for at the contract unit price per pound bid. The number of pounds paid for shall be the actual weight of piling in place and accepted, plus an allowance for cut-off. In determining the weight to be paid for, the length of each sheet pile (and special section) shall be considered the length below the specified top of sheeting plus the length of cut-off but not to exceed 6 inches of cut-off. Payment for the quantity determined as described above shall constitute full compensation for furnishing, fabricating, driving, cutting-off and connecting all steel sheet piling and special sections required, and for removal of obstructions.

The steel H Piling shall be paid for at the contract unit price per pound bid. The number of pounds paid for shall be the actual weight of the number of feet of piling in place plus the length of cut-off but not to exceed 2 feet of cut-off per pile.

Class "E" concrete shall be paid for at the contract unit price bid per cubic yard for Item "S-1, Class "E" concrete, anchor caps."

Payment for reinforcing steel will be made per contract unit price bid per pound, for Item "S-4, Reinforcing Steel in Anchor Caps."

Payment will be made for dockwall at the contract unit price bid per pound for Item "S-7 and Special, Steel Sheet Piling, Steel H Anchor Piles and Steel Wales, for dockwall."

Payment shall be made for anchor rods, turnbuckles, etc., at the contract unit price bid per pound for Item "S-7 and Special, Steel Anchor Rods, Turnbuckles, Pipe Sleeves and fastenings for dockwall (including payment for necessary excavation, sheeting and bracing)."

Payment shall be made for the timber fenders for the dockwall at the contract unit price bid per MBM for Item "S-13, Creosoted Timber Fenders for Dockwall including hardware."

30. ERIE RAILROAD TRACK WORK

The Erie Railroad Company shall furnish and place ballast and accomplish all track work upon the completed subgrades constructed by the contractor.

The several phases of work by the contractor and the railroad company will require close cooperation and coordination. The contractor shall notify the railroad company sufficiently in advance of all track moves so that traffic and work schedule interruptions will be held to a minimum.

The contract unit price bid for Item "Special Temporary Timber Crib Wall" per square foot shall be complete compensation for furnishing, installing and maintaining a temporary cribwall and embankment to the elevations and grades shown on the plans for the period of time necessary and the subsequent removal thereof upon completion of the construction phase of which they are a part. Any track ballast remaining after any track shift and not reclaimed by the railroad shall be considered part of the temporary fill and removed from the site or deposited in permanent fill areas by the contractor. The basis of measurement shall be the number of square feet of surface on the face of the cribwall. The height shall be measured along the battered face of the wall. Any excavation and subsequent backfilling necessary in the course of the track shifts shall be considered as incidental to the performance of this pay item and the contract unit price bid shall include payment therefor.

31. PILING (Continued)

Revisions announced Oct 6, 1954, made Dec 6, 1954 PART 2

It will be the Contractor's responsibility to provide a shell or casing, for the cast-in-place reinforced concrete piles, of adequate wall thickness, but this thickness shall be not less than No. 7 gauge if the casings are driven without a mandrel.

No "Item S-16, First Test Pile" is provided in the quantities. The first test pile of each type, together with all labor, material, equipment and incidentals therefor, will be paid for per linear foot under the pertinent "S-18" item or per pound under the pertinent "S-7 and Special" item. Continued on Sheet 2.

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

GENERAL NOTES

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE
MADE GA DATE 6-28-54
TRCD JB DATE 7-2-54
CKD CJC DATE 7-8-54

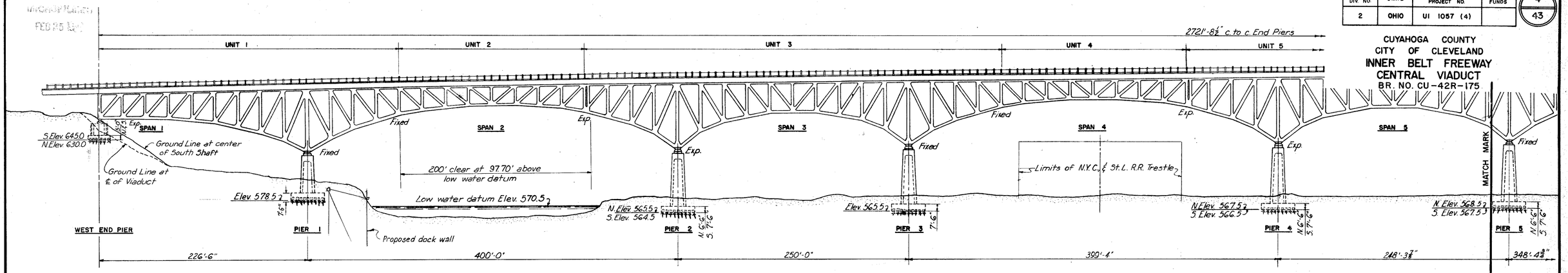
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 1.03

REV 9-24-54

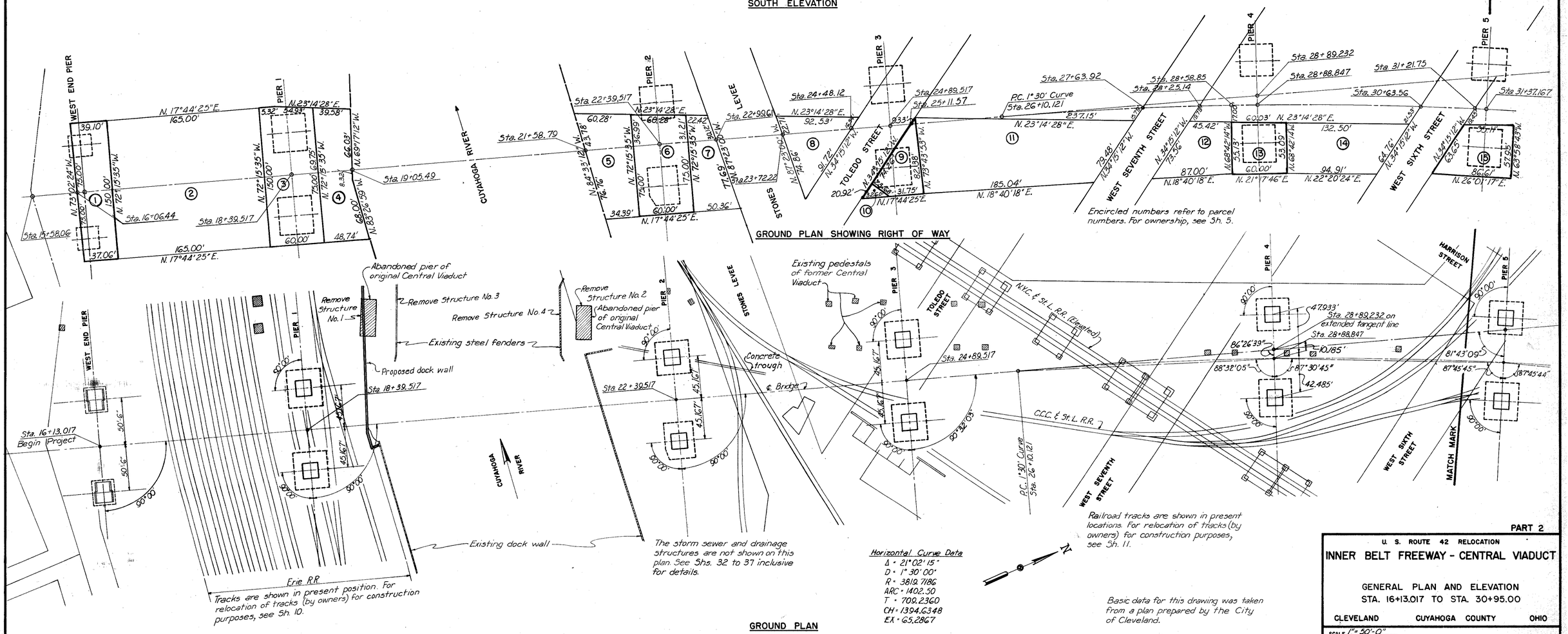
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

4
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
B.R. NO. CU-42R-175



SOUTH ELEVATION



GROUND PLAN SHOWING RIGHT OF WAY

Tracks are shown in present position. For relocation of tracks (by owners) for construction purposes, see Sh. 10.

The storm sewer and drainage structures are not shown on this plan. See Shs. 32 to 37 inclusive for details.

Railroad tracks are shown in present locations. For relocation of tracks (by owners) for construction purposes, see Sh. 11.

GROUND PLAN

Horizontal Curve Data
Δ = 21°02'15"
D = 1°30'00"
R = 3819.7186
ARC = 1402.50
T = 709.2360
CH = 1394.6348
EX = 65.2867

Basic data for this drawing was taken from a plan prepared by the City of Cleveland.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

GENERAL PLAN AND ELEVATION
STA. 16+13.017 TO STA. 30+95.00

CLEVELAND CUYAHOGA COUNTY OHIO

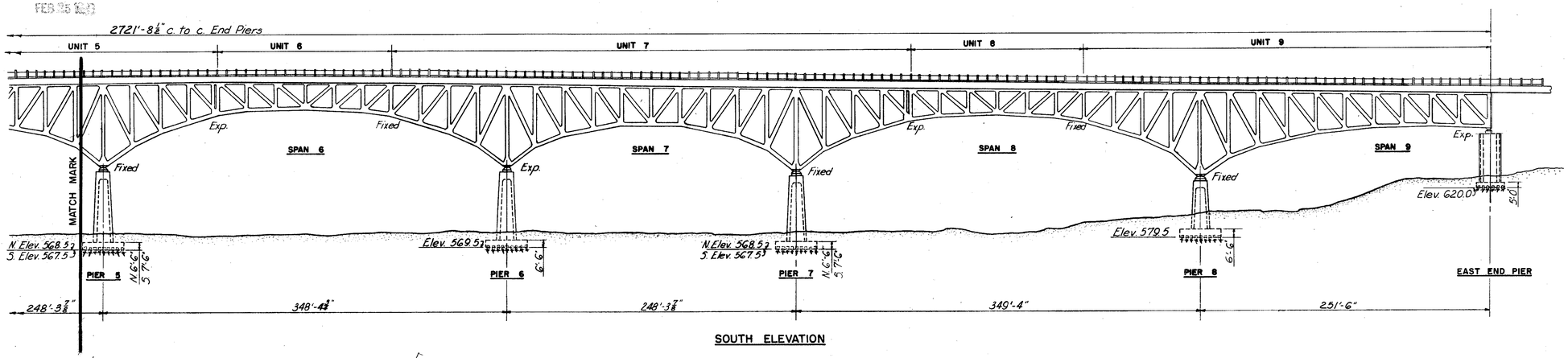
SCALE 1"=50'-0"
MADE N.A.M. DATE 1-10-54
TRCD N.A.M. DATE 6-12-54
CKD G.A. DATE 7-8-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.04

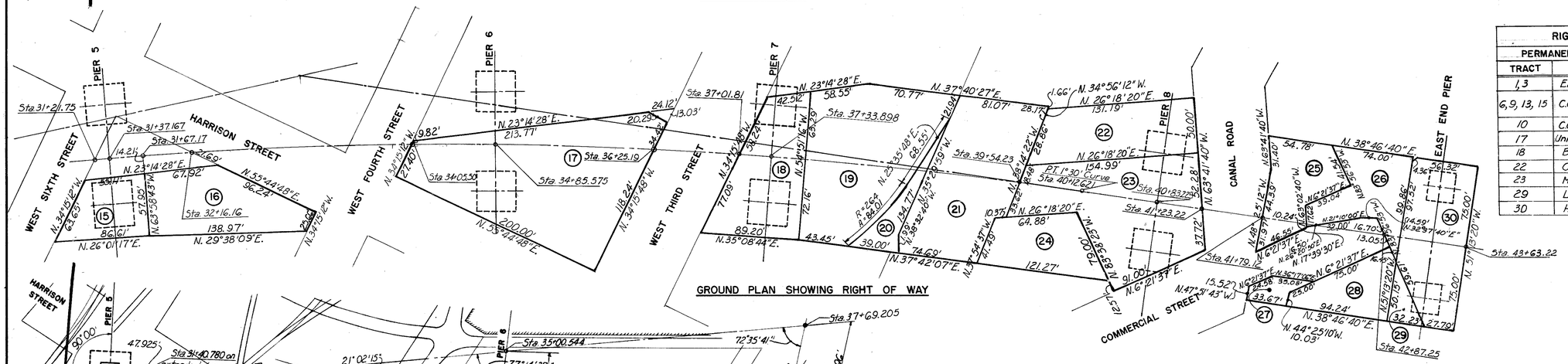
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

5
43

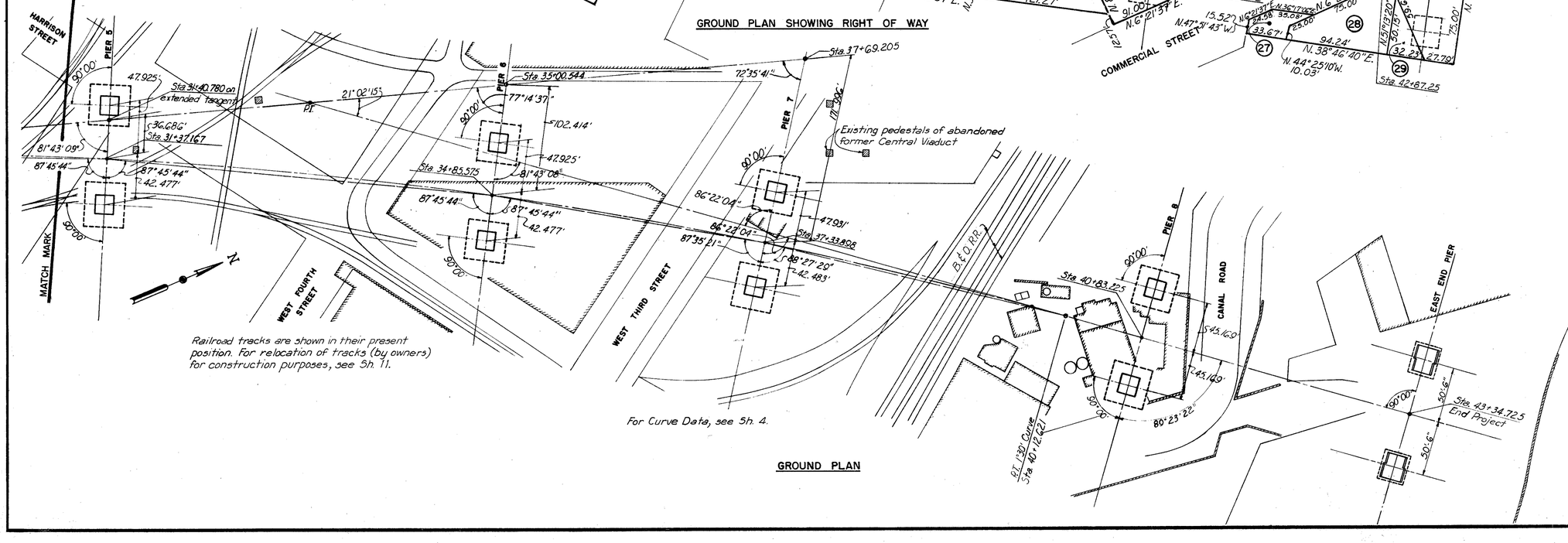
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
BR. NO. CU-42R-175



SOUTH ELEVATION



GROUND PLAN SHOWING RIGHT OF WAY



GROUND PLAN

RIGHT OF WAY ACQUISITION REQUIREMENTS

PERMANENT ACQUISITION		AERIAL RIGHTS ONLY	
TRACT	OWNER	TRACT	OWNER
1,3	Erie Railroad	2,4	Erie Railroad
6,9,13,15	C.C.C. & St. L. Railroad	3,7,8,11,12,14,16,20	C.C.C. & St. L. Railroad
10	C.C.C. & St. L. Railroad	19,21	B. & O. Railroad
17	United Garage & Service Corp.	24	Sidney C. Brant
18	B. & O. Railroad	25	W. & L. E. Railroad
22	Cleveland Trust Co.	26	Helen C. Lincoln
23	Mildred L. Richards	27	Wilson Terminals, Inc.
29	Louis J. Kaplan	28	Louis J. Kaplan
30	Helen C. Lincoln		

Work included in this contract:
1. Two end piers
2. Piers 1 to 8 inclusive
3. Complete drainage and sewer system
4. Removal of existing structures 1, 2, 3, and 4 from the Cuyahoga River
5. Removal of 7 pedestals of former Central Viaduct
6. Track modifications (force account by railroads)

PART 2

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

GENERAL PLAN AND ELEVATION
STA. 30+95.00 TO STA. 43+34.725

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=50'-0"
MADE N.A.M. DATE 1-10-54
TRCD N.A.M. DATE 6-12-54
CKD G.A. DATE 7-8-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

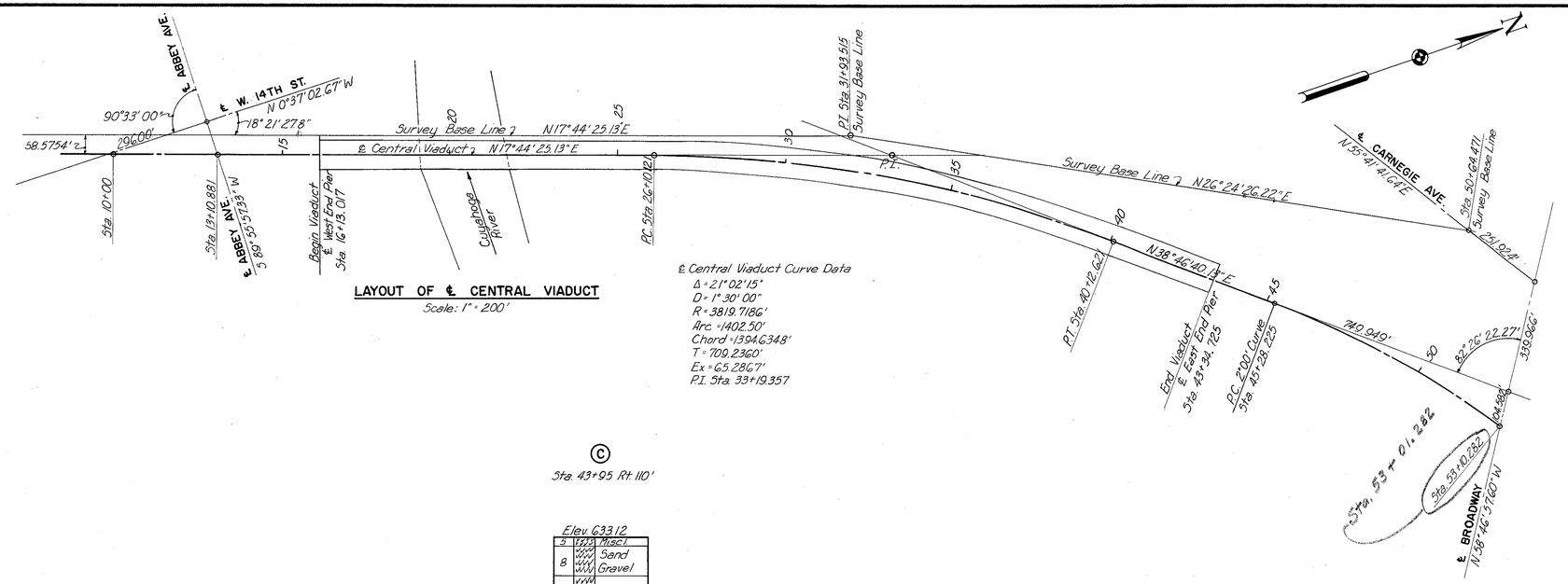
914-1A SHEET- 1.05

RECEIVED
FEB 25 1955

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

6
43

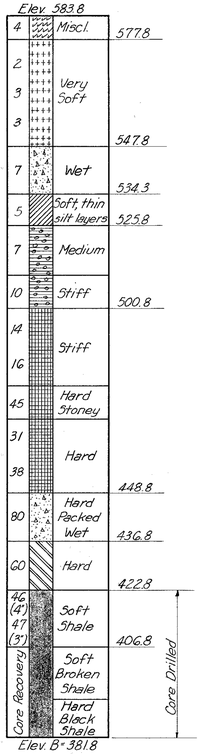
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



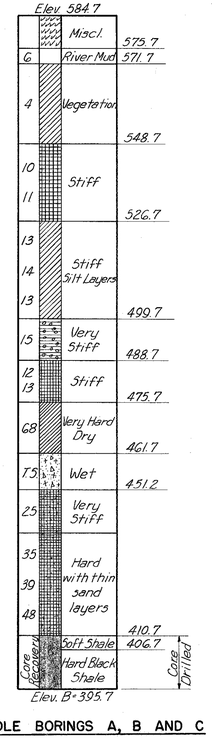
LAYOUT OF ℄ CENTRAL VIADUCT
Scale: 1" = 200'

℄ Central Viaduct Curve Data
Δ = 21° 02' 15"
D = 1° 30' 00"
R = 3819.7186'
Arc = 1402.50'
Chord = 1394.6348'
T = 709.2360'
Ex = 65.2867'
P.I. Sta. 33+19.357

Ⓐ
Sta. 29+53 Rt. 265

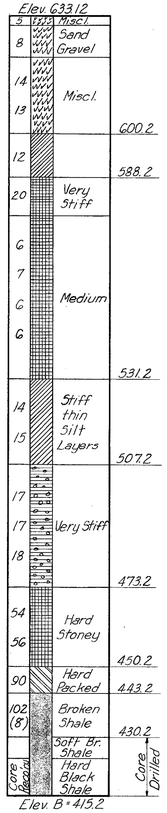


Ⓑ
Sta. 37+10 Rt. 205'



TEST HOLE BORINGS A, B AND C

Ⓒ
Sta. 43+95 Rt. 110'

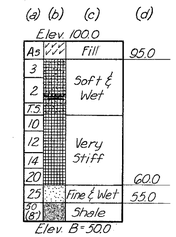


GENERAL NOTES

SOIL LEGEND

- Miscl.
- Fill
- Clay
- Sand
- Silt
- Silty Sand
- Silty Clay
- Sandy Clay
- Pebbly Clay
- Sand and Gravel
- Silt, Sand and Gravel
- Sand, Clay and Gravel
- Rock
- Ground Water
- Trap Sample T.S.
- Auger Sample A.S.
- Tube Trap T.T.

BORING LEGEND



With reference to above example;
1. In column (a) the figures 2, 3, etc. are the hammer blows required to advance the casing one foot unless otherwise noted.
2. Column (b) shows the legend of soil types and ground water elevation.
3. Column (c) shows soil classification. Elev. 100.0 is the ground level and Elev. B = 30.0 is the bottom of the boring.
4. Column (d) shows the intermediate elevations of limits of different soil layers.

Misc. Notes: Vertical scale for boring 1" = 20'.
All samples taken with Split Type Tube, 2"O.D. x 1.5" I.D. and 4" steel casing unless otherwise noted. Hammer wt. 140.# Averege fall 30".

Revised 1-26-55 A.H.H.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
ER NO.
GENERAL LAYOUT AND
TEST HOLE BORINGS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE Vertical: 1" = 20'
MADE J.G.S. DATE 1-27-54
TRCD. A.M.M. DATE 2-6-54
CKD. C.J.C. DATE 2-25-54

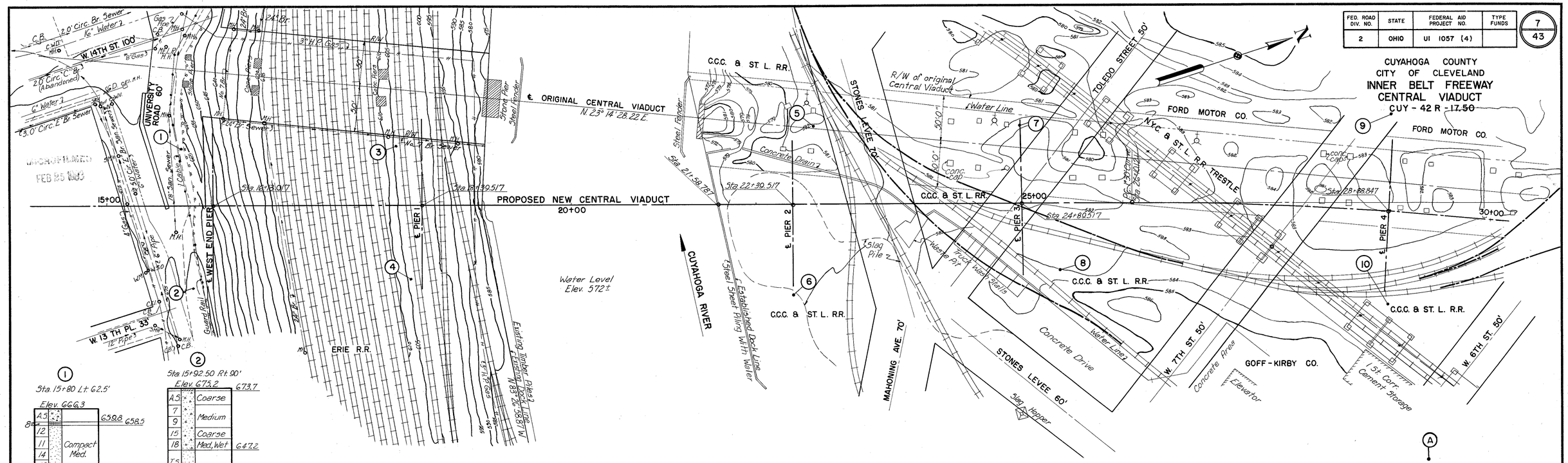
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.06

106

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

7
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



① Sta. 15+80 Lt. 62.5'
Elev. 666.3

84	A.S.		659.8 658.5
	12		
	11	Compact Med.	
	14		
	16		
	18	Compact Med, Wet	
	T.S.	Compact Fine, Wet	
	21		615.0
	11	Stiff	
	6	Medium	
	16		
	18		
	15	Very Stiff	
	15		
	20		

Elev. B = 546.3

② Sta 15+92.50 Rt. 90'
Elev. 675.2

	A.S.	Coarse	673.7
	7		
	9	Medium	
	15		
	18	Coarse	
		Med, Wet	647.2
	T.S.		
	18	Med Wet	
	35	Fine, Wet	
	T.S.	Fine, Wet	617.2 614.2
	9	Stiff	
	15		
	14	Very Stiff	
	9		
	9	Medium	
	16		
	19	Very Stiff	

Elev. B = 545.2

③ Sta 18+11.50 Lt. 6.4'
Elev. 604.0

	4	Cinder & Slag	592.0
	7		
	8	Fine, Brown	578.0
	6	fn Grey, Wet	573.0
	6	Med Grey	
	14	Very Stiff	
	9	Stiff	
	7	Medium	
	14		
	15	Very Stiff	
	12		
	17	Very Stiff & Stoney	
	9	Stiff	
	7	Medium	482.5
	T.S.	Coarse & Wet	

Elev. B = 474.0

④ Sta 18+27.50 Rt. 80'
Elev. 604.2

		Cinder	591.7
	5	fine, Brown	585.2
	12	Grey	578.0
	8	Medium	572.2
	6	Soft	
	7	Medium	
	11	Stiff	
	17	Very Stiff	
	11	Stiff	
	25	Hard Stoney	
	26		
	25	Very Stiff	
	11	Stiff	486.2
	T.S.	Coarse, Wet	475.2
	22	Very Stiff with Thin Silt Layers	461.7
	T.S.	Wet	

Elev. B = 454.2

⑤ Sta 22+62 Lt. 85'
Elev. 581.5

		Miscl.	577.5
	3	Loam	574.5
	4	Wet	570.5
	7	Wet	564.0
	T.S.	Med. Wet	
	T.S.	Coarse, Wet	548.5
	9	Stiff	
	7	Medium	538.5
	8		528.5
	8	Medium	
	12	Stiff	
	15	Very Stiff	
	9	Stiff	479.5
	37	Hard	468.0
	9	Medium	457.5
	T.S.	Coarse, Wet	453.0
	35 (8")	Hard	447.5 446.0
	T.S.	Medium	
	35/0	Hard	443.0
	50 (8")	Hard	428.0
	50 (10")		Grey Shale

Elev. B = 427.0

⑥ Sta 22+40 Rt. 100.5'
Elev. 580.6

			575.1
	A.S.	Brown, Wet @ 8.5'	569.6
	2	Soft	
	7	Medium	559.1
	8	Coarse	548.1
	T.S.		
	9	Stiff	538.6
	9		
	11	Stiff	
	12		
	18	Very Stiff	

Elev. B = 500.6

⑦ Sta 24+89 Lt. 85'
Elev. 581.9

	3	Sand, Cinder & Clay	
	4	Brown Clay	573.4
	2	Loam, Wet	569.9
	2	Fine, Wet	563.9
	2	Fine, Wet	559.6
	4	Med Wet	
	T.T.	Wet	548.9
	12	Stiff with Thin Silt Layers	
	13		
	8	Med with Thin Silt Layers	518.9
	9	Medium	
	12	Stiff	501.9
	12	Stiff	

⑧ Sta 25+30 Rt. 75'
Elev. 583.0

		Slag & Clay	579.0
	4	Loamy, Fine, Wet	574.0
	6	Medium	568.0
	2	Fine, Wet	564.0
	5	Fine, Wet	558.0
	6	Wet	
	T.S.		544.0
	14	Stiff with Thin Silt Layers	
	13	Stiff with Thin Silt Layers	524.0
	20	Very Stiff	514.0
	16	Very Stiff	
	14	Stiff	

Elev. B = 503.0

⑨ Sta 28+85 Lt. 105.5'
Elev. 582.0

	4	Miscl. (Cinder Fill)	576.0
	3	Soft, Wet @ 6'	
	5	Med. with Vegetation	565.0
	2	Soft	560.0
	2	Soft Little Clay	
	2		552.0
	4	Wet & Gravel Loose	
	6		533.0
	19	Very Stiff	
	22		
	19		
	13	Stiff	

Elev. B = 502.0

⑩ Sta 28+94 Rt. 104.5'
Elev. 583.3

	4	Miscl.	575.3
	6	Brn & Grey	
	10	Med. Veg.	566.3
	2		
	2	Very Soft	
	2		548.3
	6		
	T.S.		531.3
	16		
	15	Very Stiff	
	15		503.3
	15	Very Stiff	

LEGEND

Sewer M.H. Brick M.H.
R/W
Sidewalk
Curb
Guard Rail
Boring ①
O.B.T.
Gas Valve
Western Union M.H. M.H.
Water M.H. Valve
Hydrant
Temporary Track Relocations

Notes: For general notes on borings and soil and boring legend, see Sheet 6.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
EXISTING CONDITIONS AND TEST HOLE BORINGS

CLEVELAND CUYAHOGA COUNTY OHIO

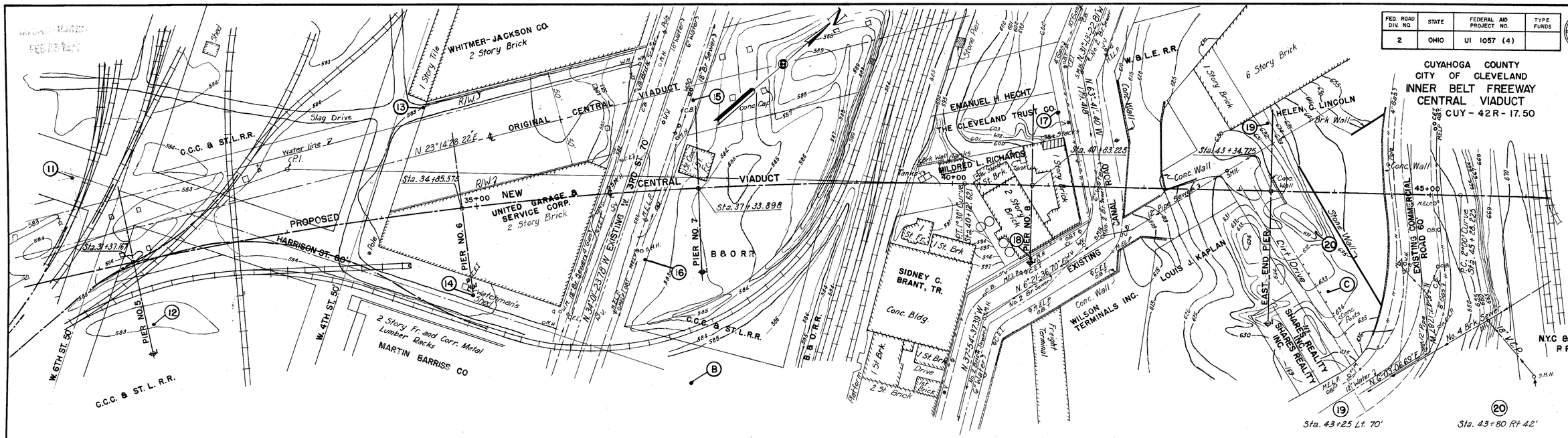
SCALE 1" = 50', 20'
MADE J.G.S. DATE 1-12-54
TRCD J.N.H. DATE 2-11-54
CKD C.C.C. DATE 2-25-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.07

104

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42R - 17.50



Notes: For general notes on borings and soil and boring legend, see Sheet 6.
Vertical scale for borings: 1" = 20'
For existing conditions legend, see Sheet 7.

PART 2

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

EXISTING CONDITIONS AND TEST HOLE BORINGS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50', 20'
MADE J.G.S. DATE 1-13-54
TRCD R.K.A. DATE 1-19-54
CKD J.G. DATE 2-26-54

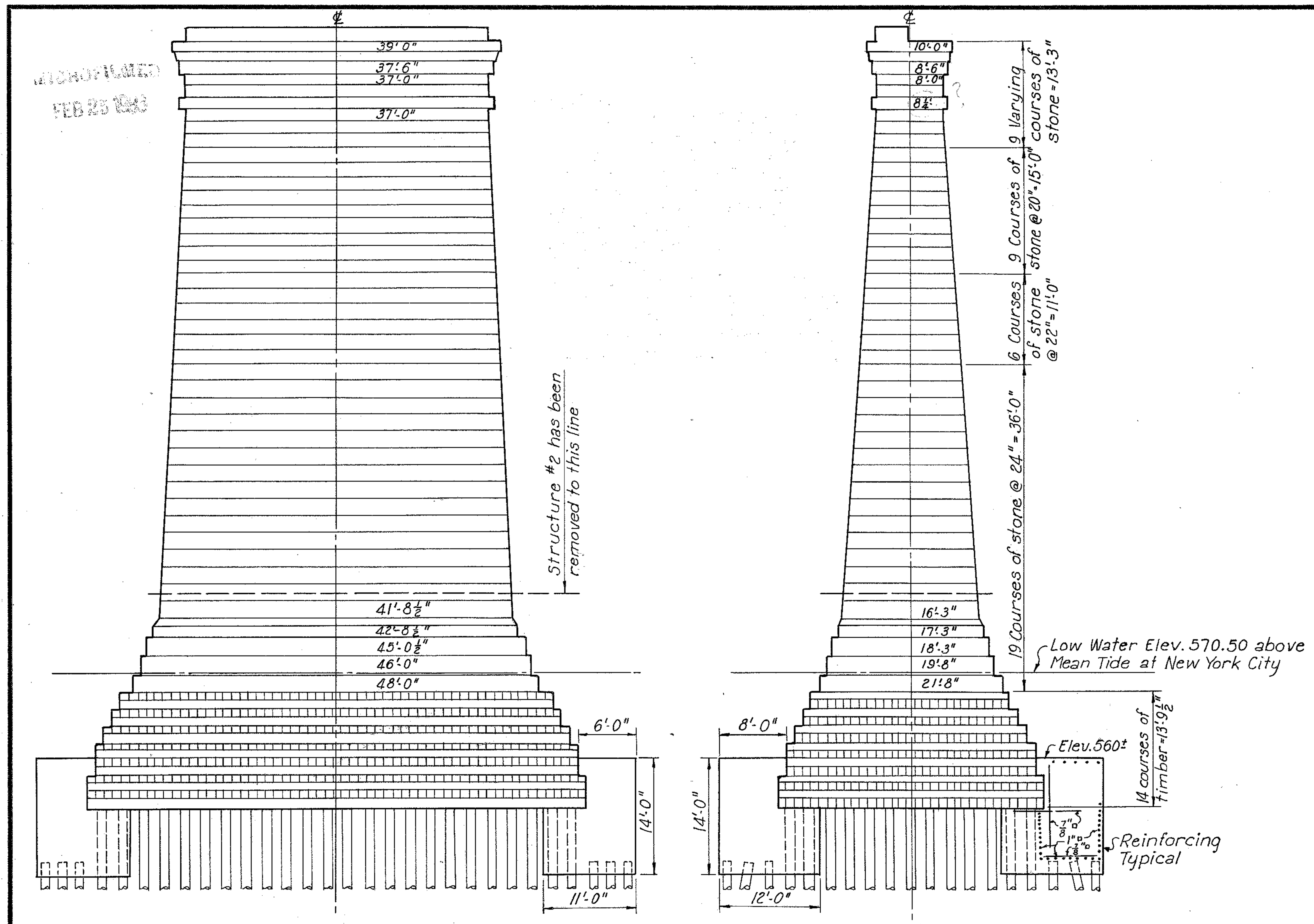
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 1.08

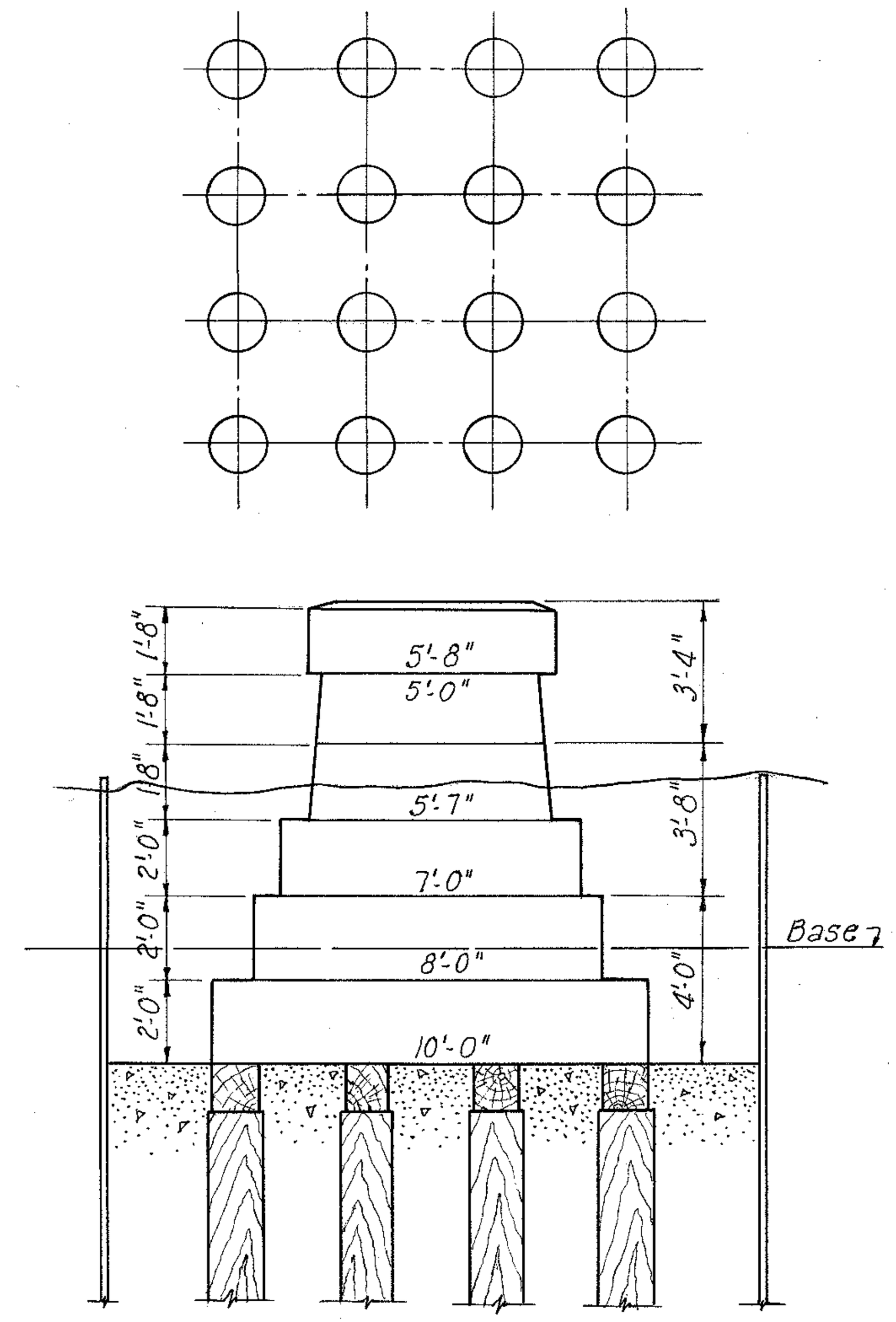
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

9
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY – 42 R – 17.50



STRUCTURES 1 AND 2
Scale: 3/32" = 1'-0"



PEDESTALS AT PIER 2

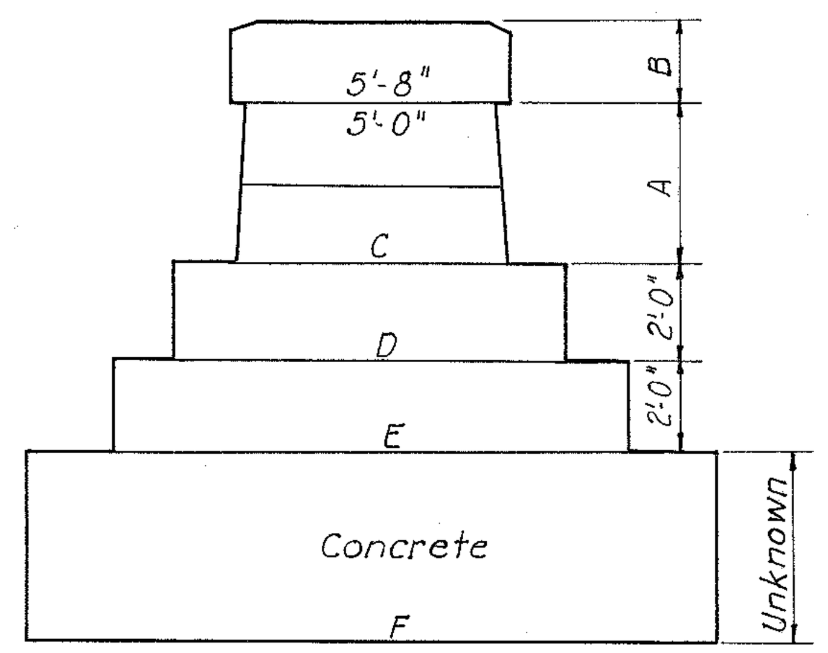
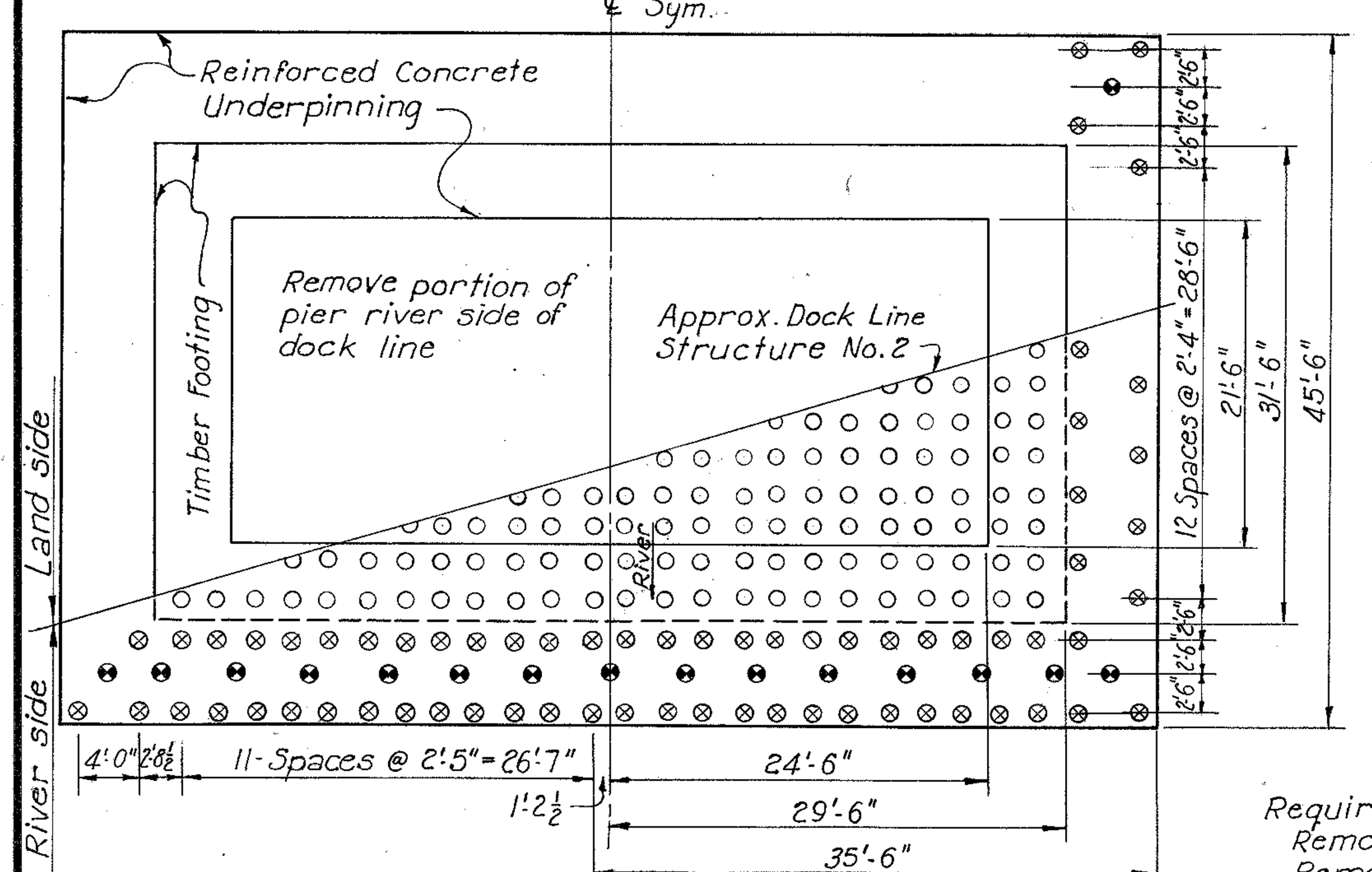


TABLE OF PEDESTAL DIMENSIONS						
Pier	A	B	C	D	E	F
3	3'-0"	1'-6"	5'-6"	7'-0"	9'-0"	11'-0"
4	3'-0"	1'-6"	5'-6"	7'-0"	9'-0"	11'-0"
5	3'-4"	1'-8"	5'-6⅔"	7'-6"	10'-0"	13'-0"
	3'-0"	1'-6"	5'-6"	7'-0"	9'-0"	11'-0"
6	3'-4"	1'-8"	5'-6⅔"	8'-0"	10'-6"	14'-0"

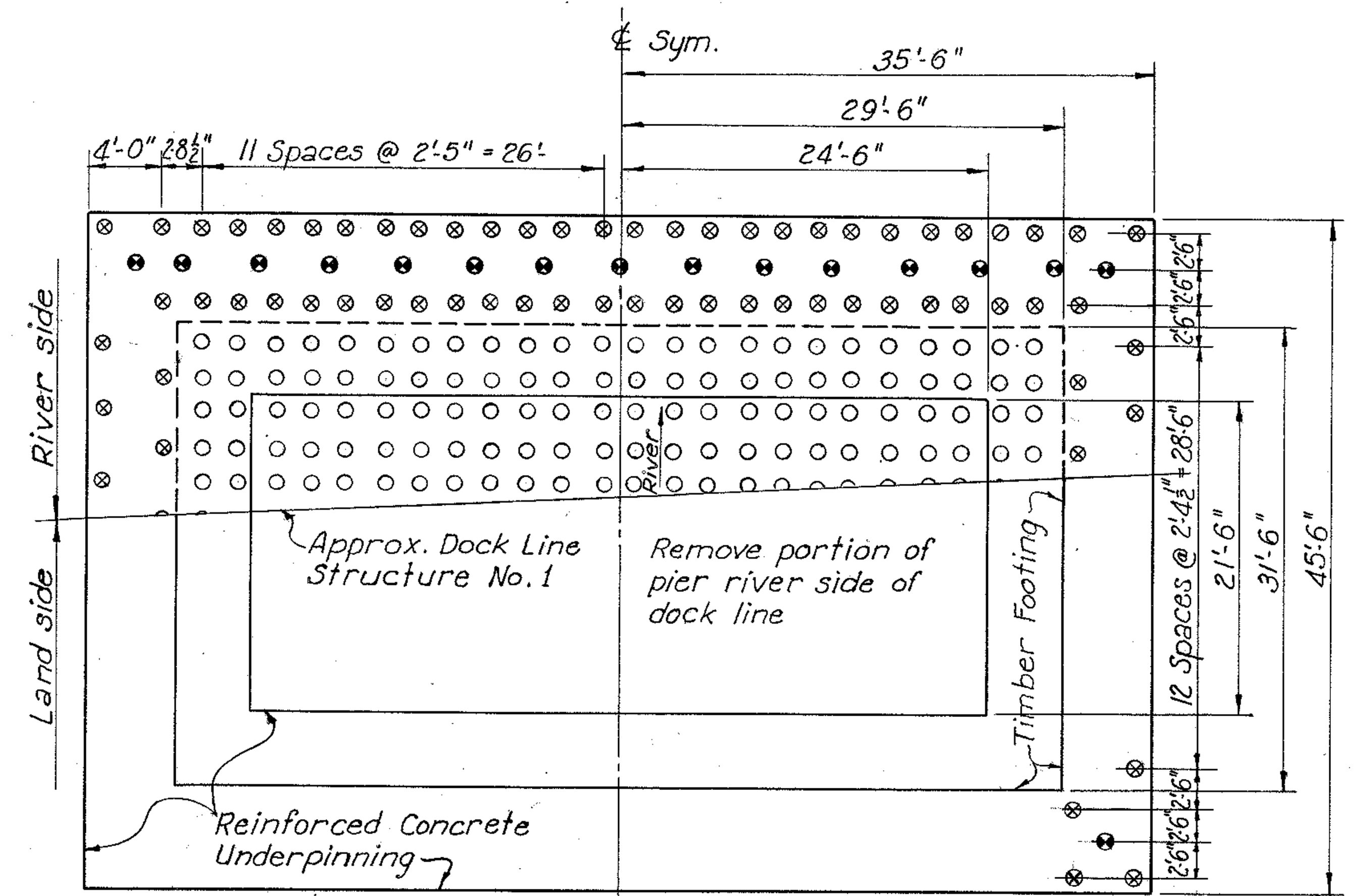
PEDESTALS AT PIERS 3, 4, 5 AND 6

Existing pedestals of the old Central Viaduct substructure which interfere with new construction shall be removed as necessary to avoid interference with new construction, including pile driving. Payment for pedestal removal to at least one foot below the surface of the ground shall be made by Item S-24, "Removing existing concrete pedestals which interfere with new construction" That portion of the pedestals beneath one foot below the ground shall be removed by the contractor, payment therefor being included in the bid price per cubic yard under pay item E-2, unclassified excavation.



Note: Payment is to be made under pay item S-24 Removal of Structures, Lump Sum for each.

PLAN OF BASE, STRUCTURE NO. 2
Scale: 3/32" = 1'-0"



Required: Structures No's. 1 and 2.
Remove walls to Elev. 576.0
Remove remainder riverward of dock line to Elev. 540.5. See Item 15 of General Notes on Sheet 3.
All removed material to become Contractor's property.

○ Original Piles 50-55' long
⊗ Underpinning Piles
⊕ Battered Piles - 2" per foot

PLAN OF BASE, STRUCTURE NO. 1
Scale: 3/32" = 1'-0"

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

EXISTING PIERS AND PEDESTALS
TO BE REMOVED

CLEVELAND CUYAHOGA COUNTY OHIO

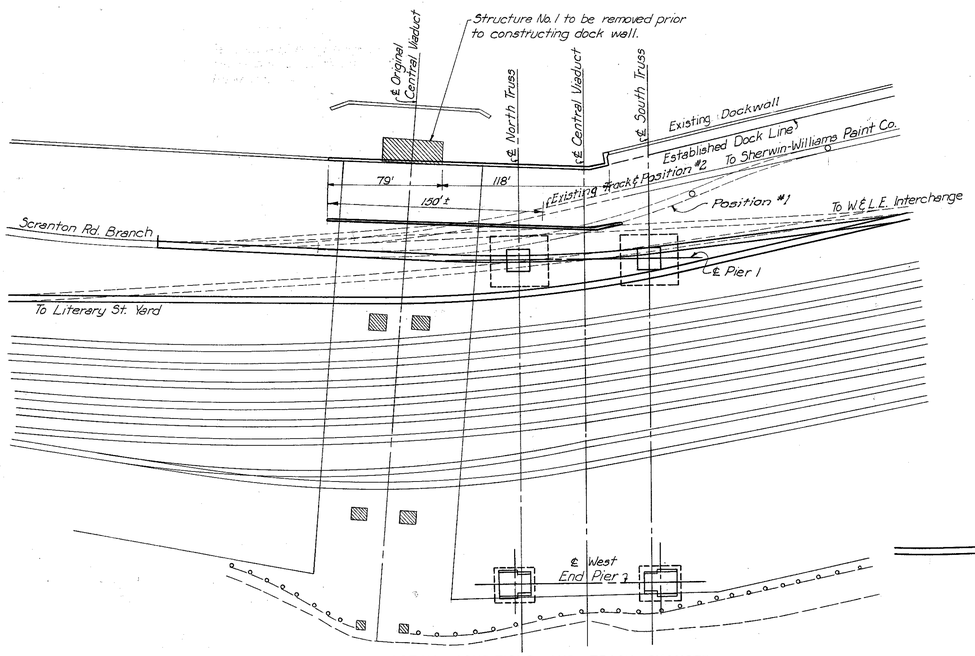
SCALE As Shown
MADE C.J.C. DATE 3-8-54
TRCD. A.H. DATE 3-20-54
CKD. G A DATE 6-15-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.09

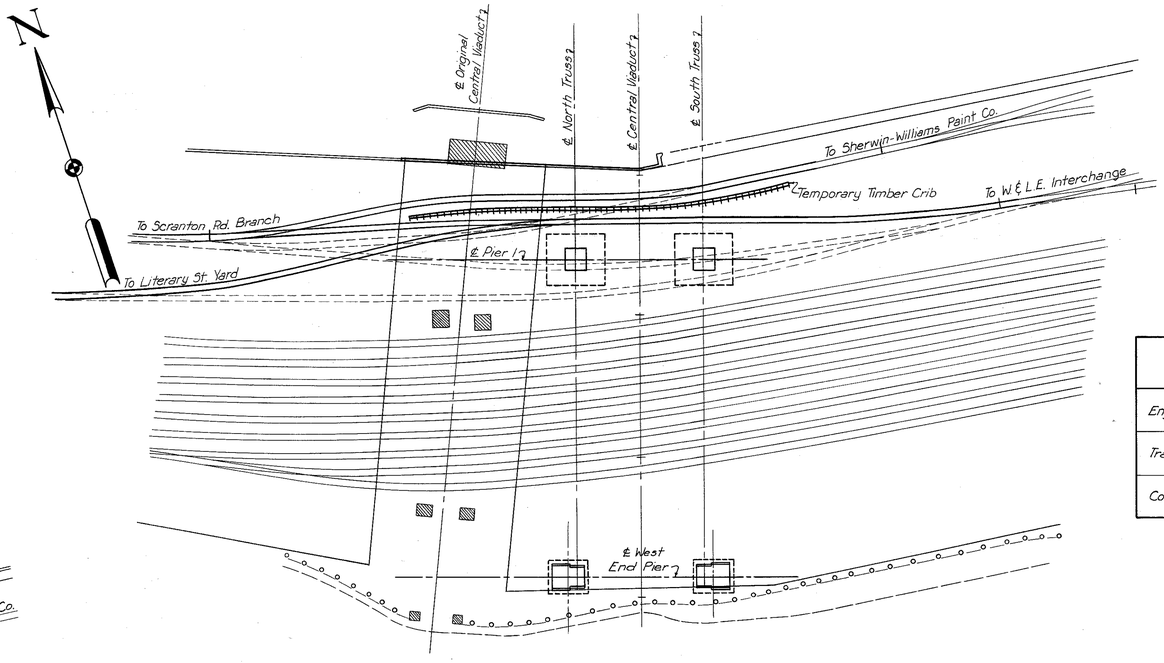
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

10
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



EXISTING CONDITIONS AND TRACK CHANGES
TO BE MADE FOR CONSTRUCTING
STEEL DOCKWALL



EXISTING CONDITIONS AND TRACK CHANGES
TO BE MADE FOR CONSTRUCTION OPERATIONS
FOR PIER 1

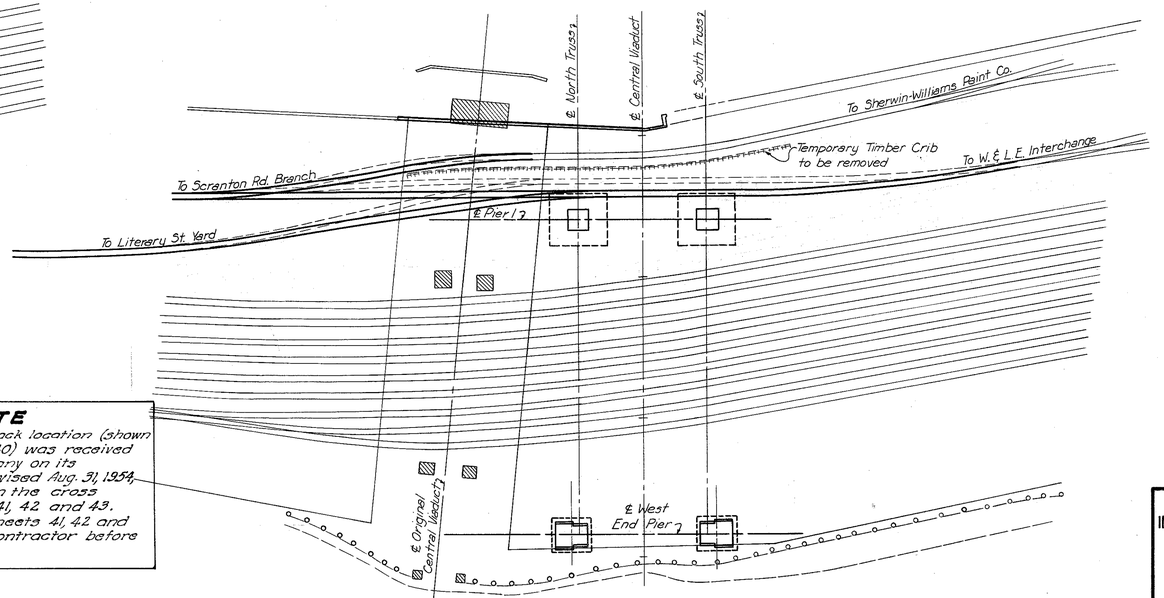
FORCE ACCOUNT WORK *By the Erie Railroad Company*	
Engineering and Inspection	*Lump Sum*
Track Work	*Lump Sum*
Communication Line Changes	*Lump Sum*

The labor and the furnishing of materials in connection with the temporary and permanent track work as shown on sheets 40, 41, 42 and 43 and as called for in the estimate will be performed by the Erie Railroad Company by force account.

SPECIAL NOTE

Additional information for track location (shown here and in Phase I of Sheet 40) was received from the Erie Railroad Company on its drawings D-194 and D-196, revised Aug. 31, 1954, too late to be incorporated in the cross sections shown on Sheets 41, 42 and 43. However, revised prints of Sheets 41, 42 and 43 will be furnished to the Contractor before he is ready to begin work.

Notes:
For dockwall construction, see sheets 38 and 39.
For profiles of grading for tracks, see sheet 40.
For cross sections parallel to ℄ of proposed Central Viaduct, see sheets 41, 42 and 43.



CONSTRUCTION CONDITIONS AND
PERMANENT TRACK RELOCATIONS

Information for track location was taken from Erie Railroad Company drawings D-194, D-195, and D-196. Revised Aug. 13, 1954

LEGEND

Present tracks to be undisturbed.

Present tracks to be removed.

Track relocations.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

ERIE RAILROAD TRACK MODIFICATIONS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50'-0"
MADE N.A.M. DATE 4-16-54
TRCD. N.A.M. DATE 4-30-54
CKD G.A. DATE 8-30-54

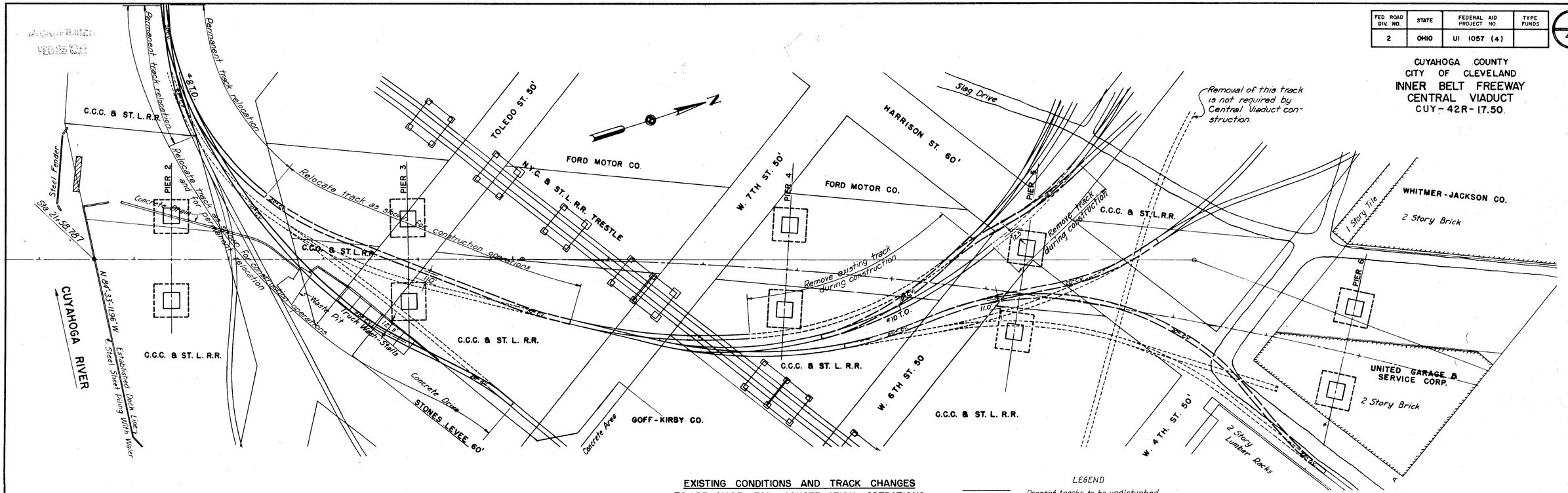
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 1.10

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

11
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50



EXISTING CONDITIONS AND TRACK CHANGES TO BE MADE FOR CONSTRUCTION OPERATIONS

CONSTRUCTION CONDITIONS AND PERMANENT TRACK RELOCATIONS

LEGEND

- Present tracks to be undisturbed.
- Present tracks to be removed.
- Track locations for construction conditions.
- Permanent track locations.

FORCE ACCOUNT WORK
by The New York Central System

North of Harrison Street - B & O Transfer Track	
Preliminary Engineering	Lump sum
Construction Engineering	Lump sum
Accounting	Lump sum
Insurance	Lump sum
South of Harrison Street and East of Cuyahoga River	
Preliminary Engineering	Lump sum
Construction Engineering	Lump sum
Track Work	Lump sum
Protection of Railroad Traffic	Lump sum
Accounting	Lump sum
Insurance	Lump sum

The labor and the furnishing of materials in connection with the temporary and permanent track work as shown on this sheet and as called for in the estimate will be performed by the New York Central System by force account.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

NEW YORK CENTRAL RAILROAD COMPANY
(lessee of the railway and property of the C.C.C. & ST. L. R.R.) TRACK MODIFICATIONS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50'
MADE N.A.M. DATE 4-12-54
TRCD. N.A.M. DATE 4-13-54
CKD. G.A. DATE 4-15-54

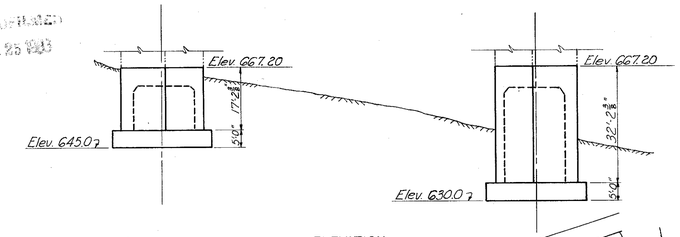
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 1.11

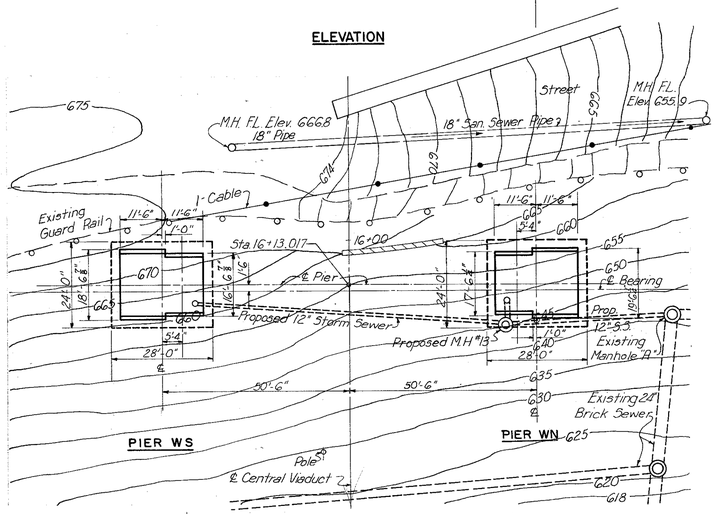
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

12 / 43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



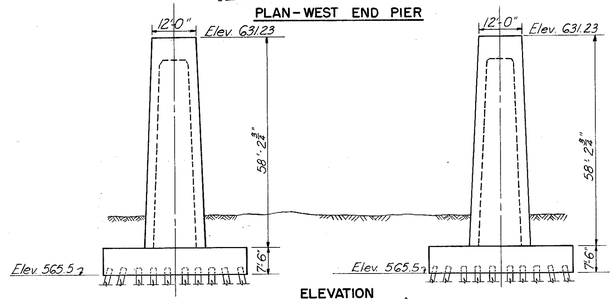
ELEVATION



PIER WS

PIER WN

PLAN - WEST END PIER



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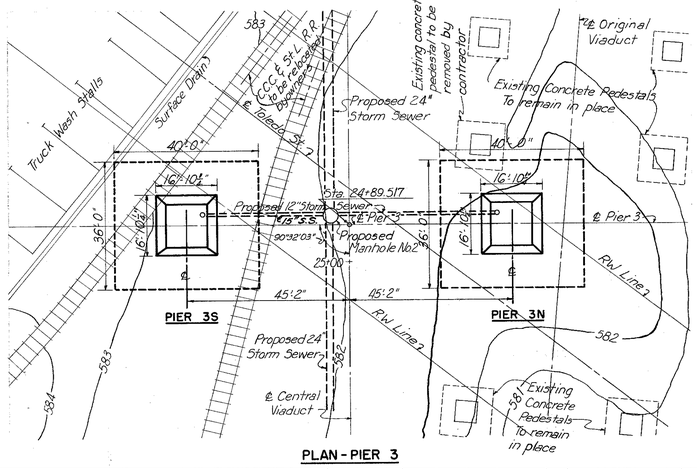
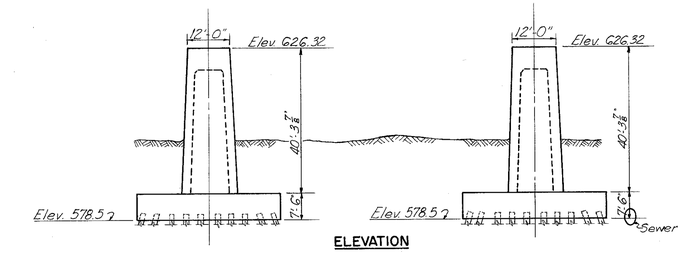


PLAN - PIER 3



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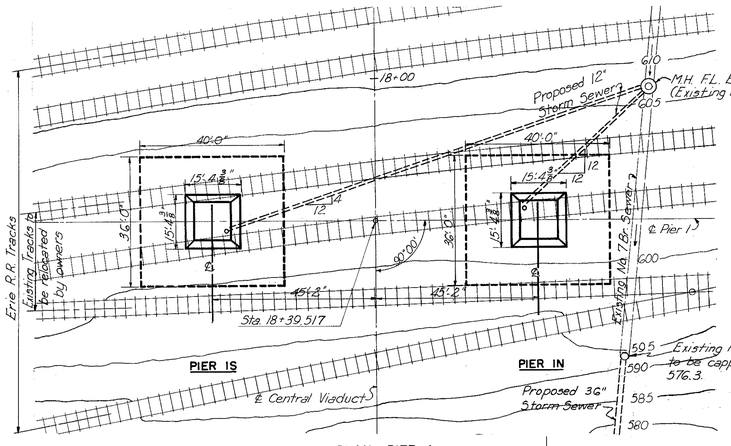
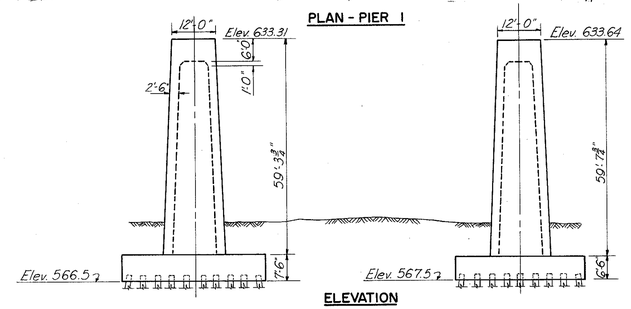
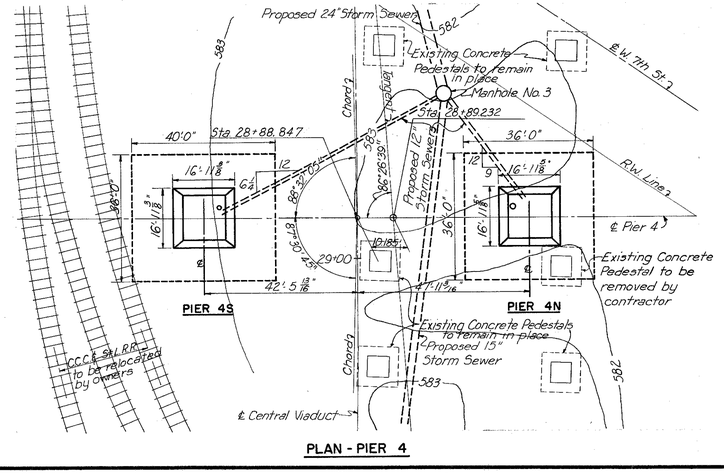


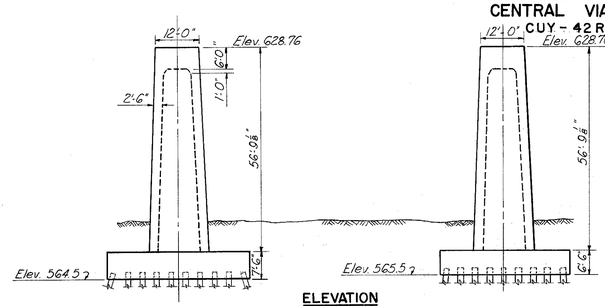
PLAN - PIER 1



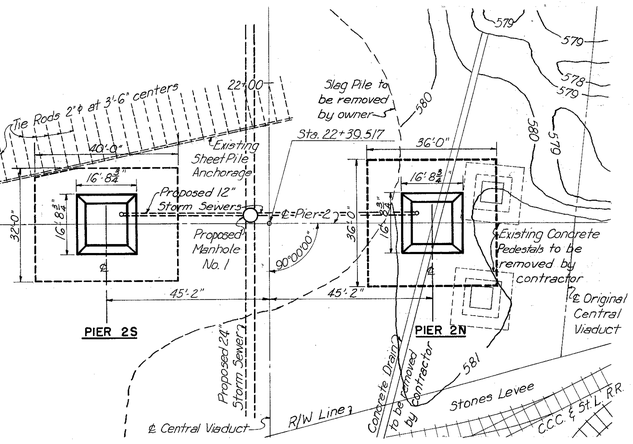
ELEVATION



PLAN - PIER 4



ELEVATION



PLAN - PIER 2

Note: For storm sewer locations, flow lines and details, see Shs. 33 to 36 inclusive. All railroad tracks are shown in their present locations. For track relocations by the owners before the contractor begins construction of pier footings, see Shs. 10 and 11.

PART 2

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

EXISTING CONDITIONS AT

WEST END PIER AND PIERS 1 TO 4 INC.

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 20'-0"
MADE R.K. DATE 1-15-54
TRCD N.A.M. DATE 6-15-54
CKD C.J.C. DATE 6-17-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

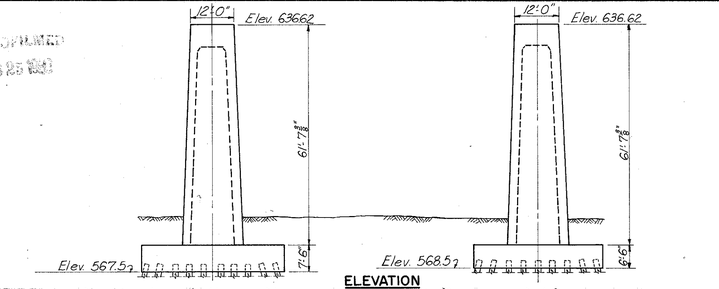
914-1A SHEET: 112

107

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

13
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



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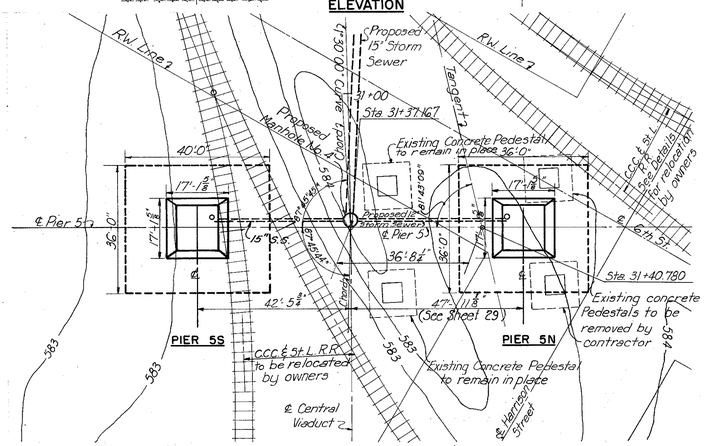
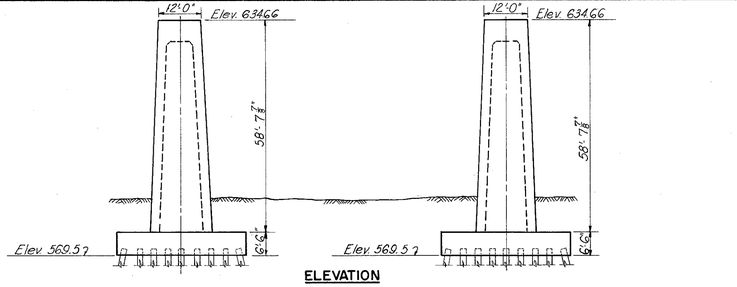


PLAN - PIER 5



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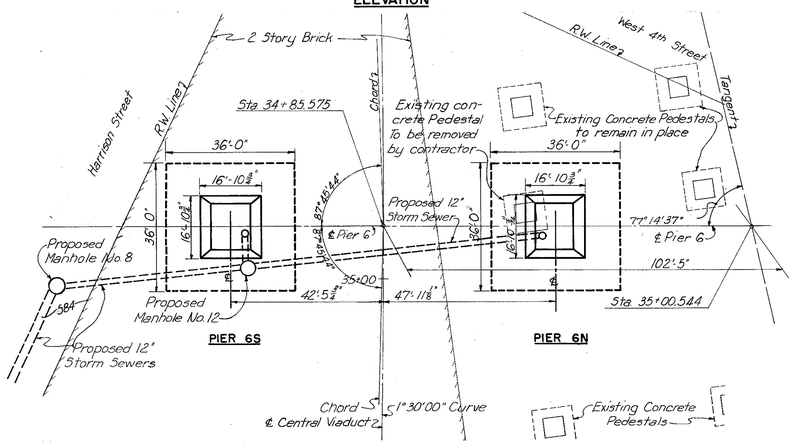
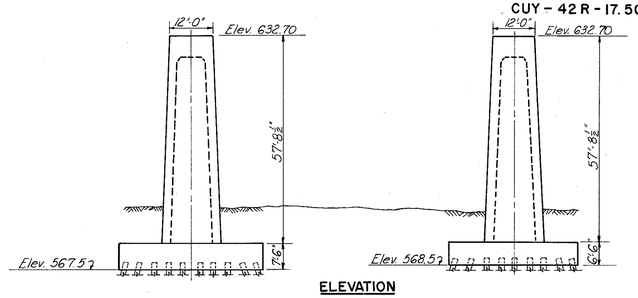
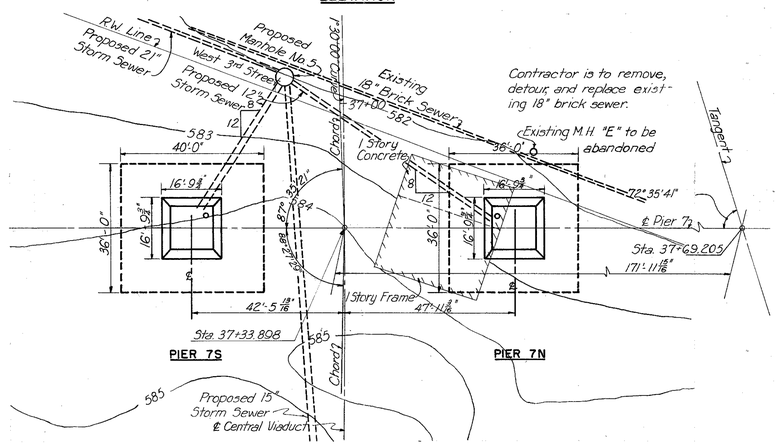


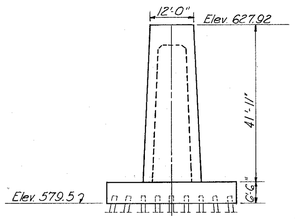
PLAN - PIER 6



ELEVATION



PLAN - PIER 7



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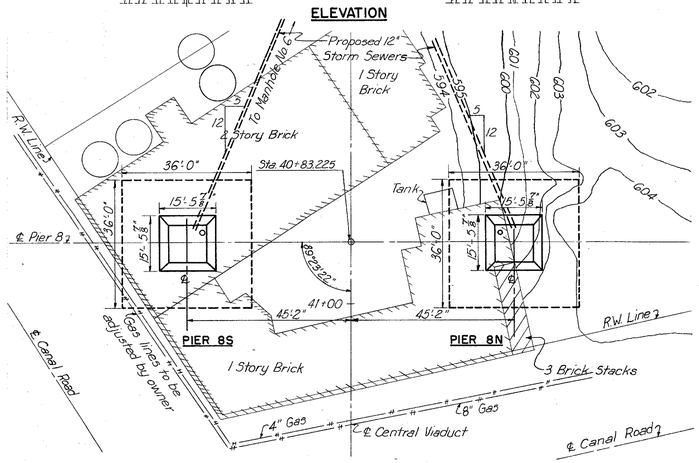
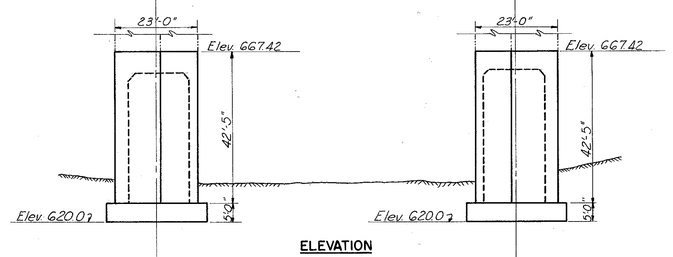


PLAN - PIER 8



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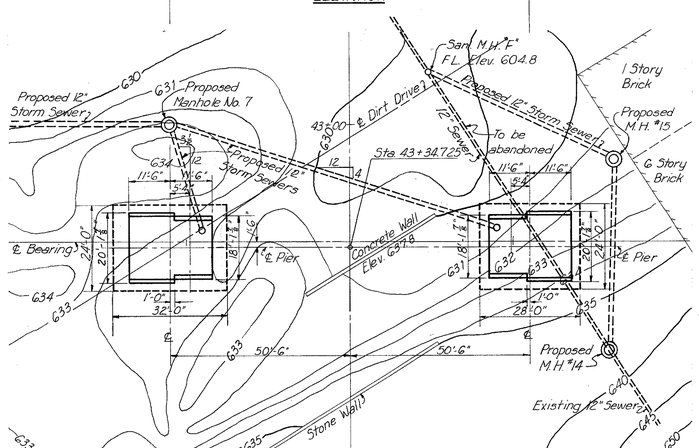
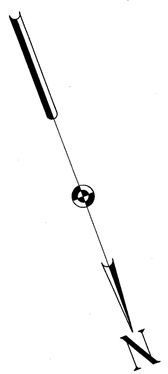


PLAN - EAST END PIER

PIER ES
PIER EN



Note: For storm sewer locations, flow lines, and details, see Shs. 33 to 36 inclusive. All railroad tracks are shown in their present locations. For track relocation by the owners before the contractor begins construction of pier footings, see Sh. 11.

PART 2

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

EXISTING CONDITIONS AT
PIERS 5 TO 8 INC. AND EAST END PIER

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 20'-0"
MADE RK DATE 1-15-54
TRCD. NAM DATE 6-15-54
CKD C.J.C. DATE 6-17-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

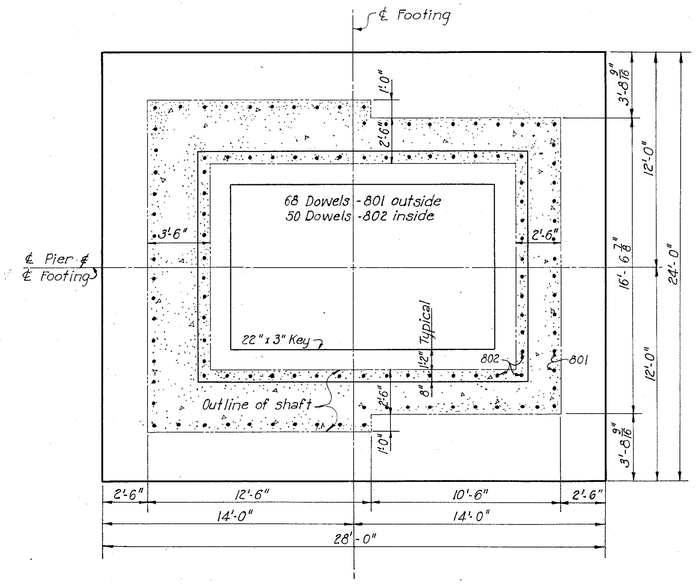
914-1A SHEET- 1.13

ACCOMPLISHED
FEB 25 1963

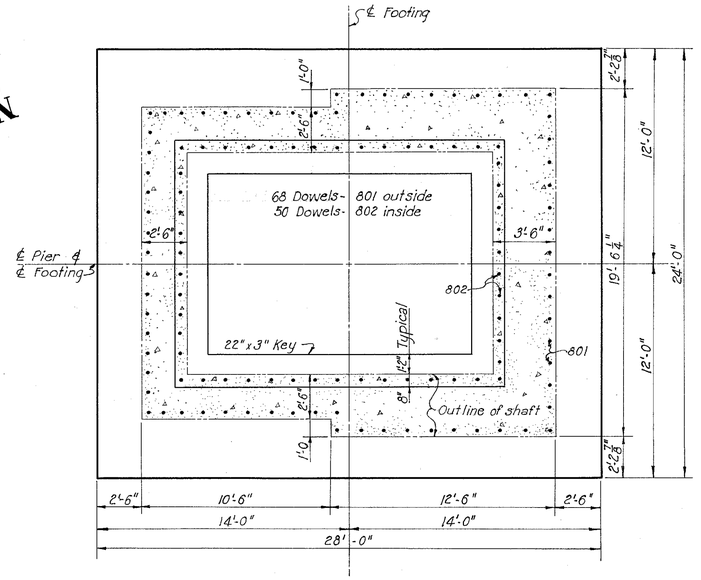
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

14
43

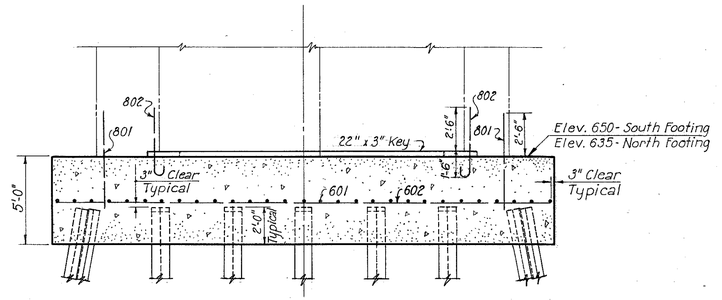
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY. - 42 R - 17.50



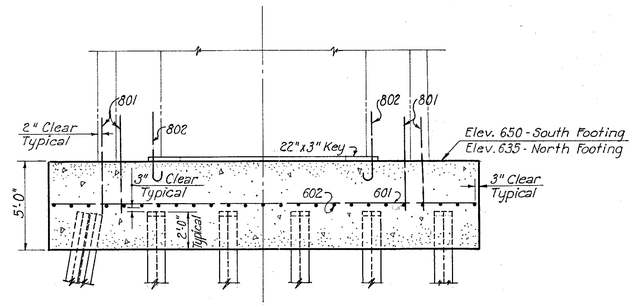
FOOTING PLAN WS



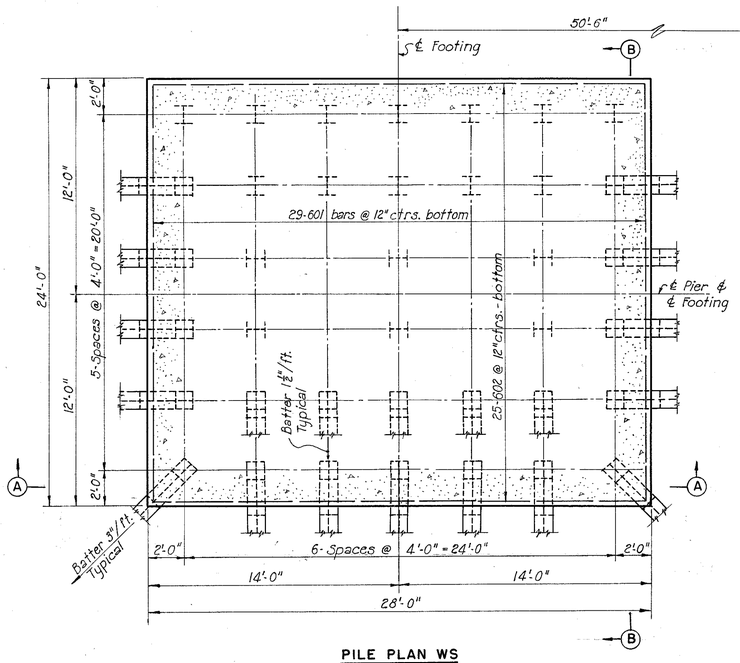
FOOTING PLAN WN



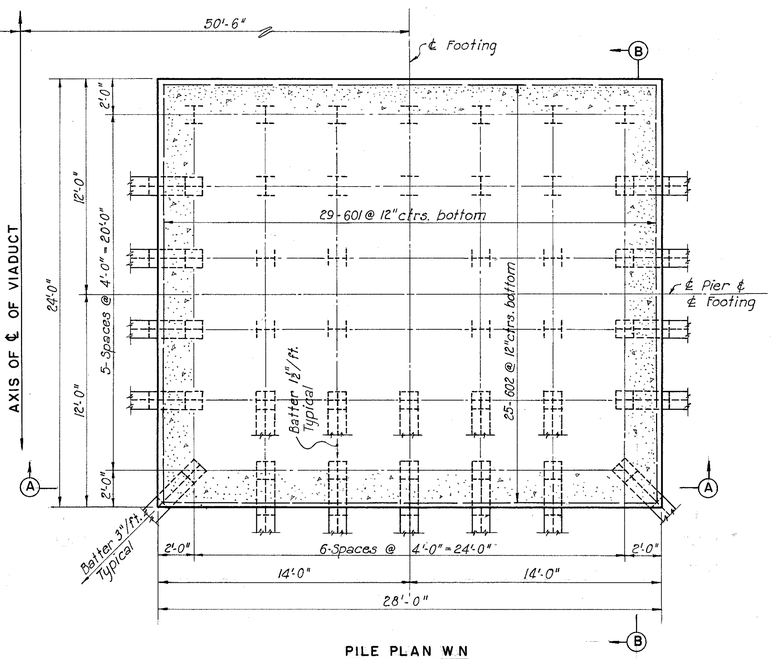
SECTION A-A



SECTION B-B



PILE PLAN WS



PILE PLAN WN

Note : 12" B P 53 steel piles with a nominal design capacity of 65 tons each.
40 piles , estimated length 60 feet each, for footing W N.
38 piles , estimated length 60 feet each , for footing W S.
Batter 3" per foot and 1½" per foot as shown.
For reinforcing schedule , see Sheet 32.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

WEST END PIER FOOTINGS , W N AND W S

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/4" = 1'-0"
MADE F.K.D DATE 6-25-54
TRCD A.H DATE 6-9-54
CKD C.J.C DATE 7-1-54

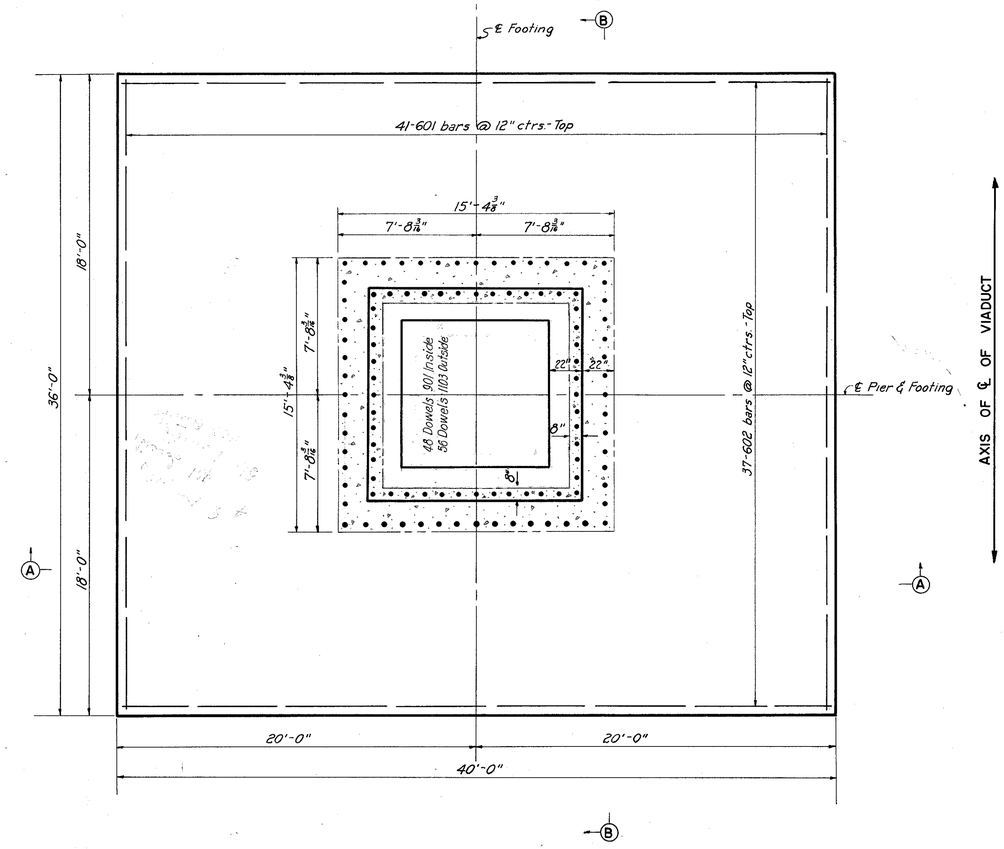
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.14

108

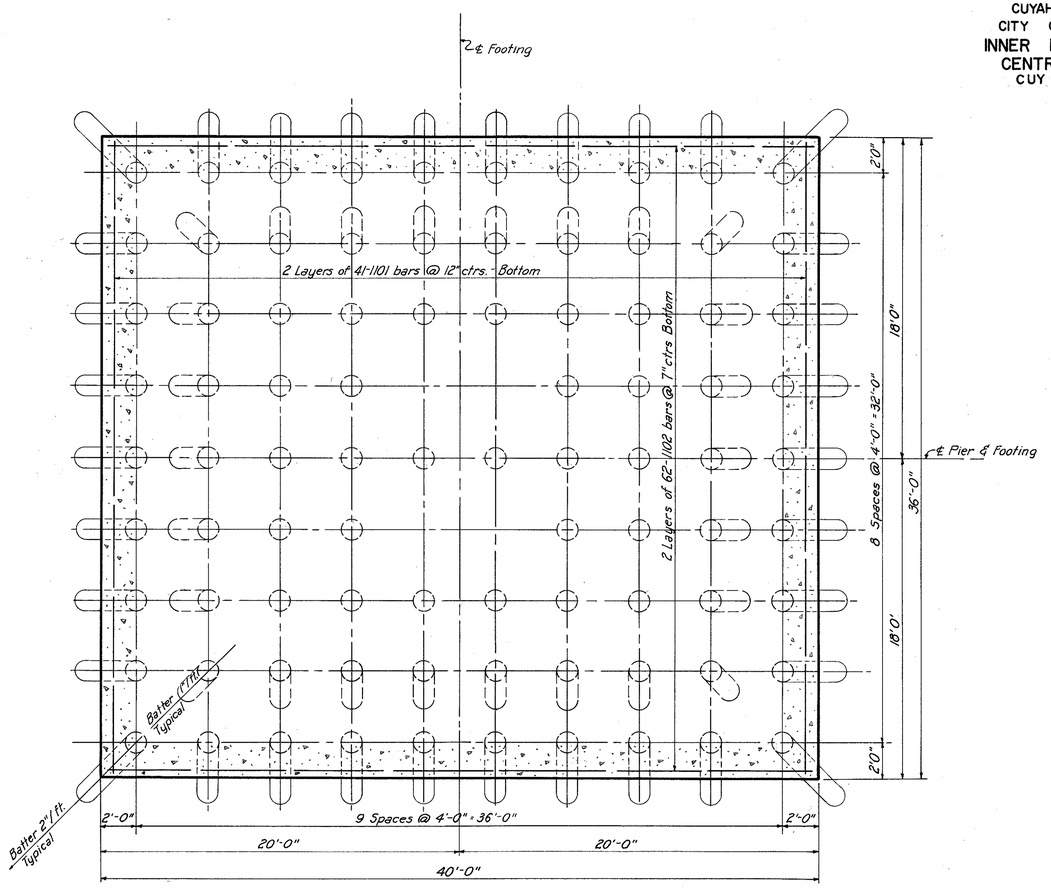
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

15/43

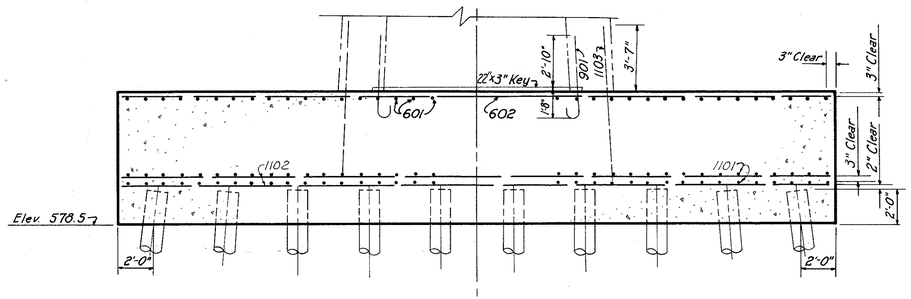
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



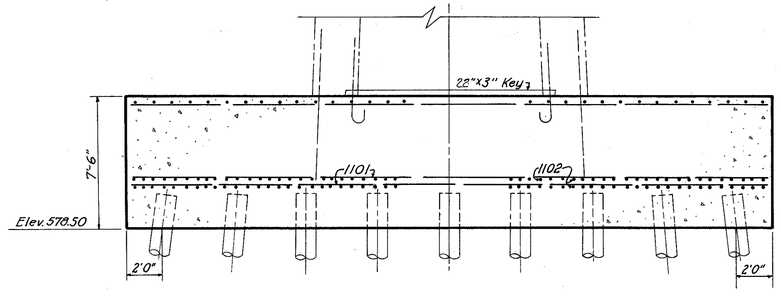
PLAN
Scale: 1/4" = 1'-0"



PILE PLAN
Scale: 1/4" = 1'-0"



SECTION A-A
Scale: 1/4" = 1'-0"



SECTION B-B
Scale: 1/4" = 1'-0"

Note:
86-14" ϕ Cast-in-Place Reinforced Concrete Piles With a Nominal design capacity of 65 Tons. Estimated Length 90 ft. each Batter Outside Row of Piles 2" per ft, and Batter Second Row of Piles 1" per ft.
For Reinforcement Schedule, See Sheets 30 and 31.
For Footing 1N, batter outside row of piles 2" per foot on East, South & West sides of footing. Batter second row of piles 1" per foot all sides and outside row of piles 1" per foot on North Side of footing.

Revised pile batters. GA 2-15-55 PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTINGS IN, AND IS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE as shown
MADE DER DATE 2-9-54
TRCD E.J.B DATE 2-4-54
CKD E.J.C DATE 2-25-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.15

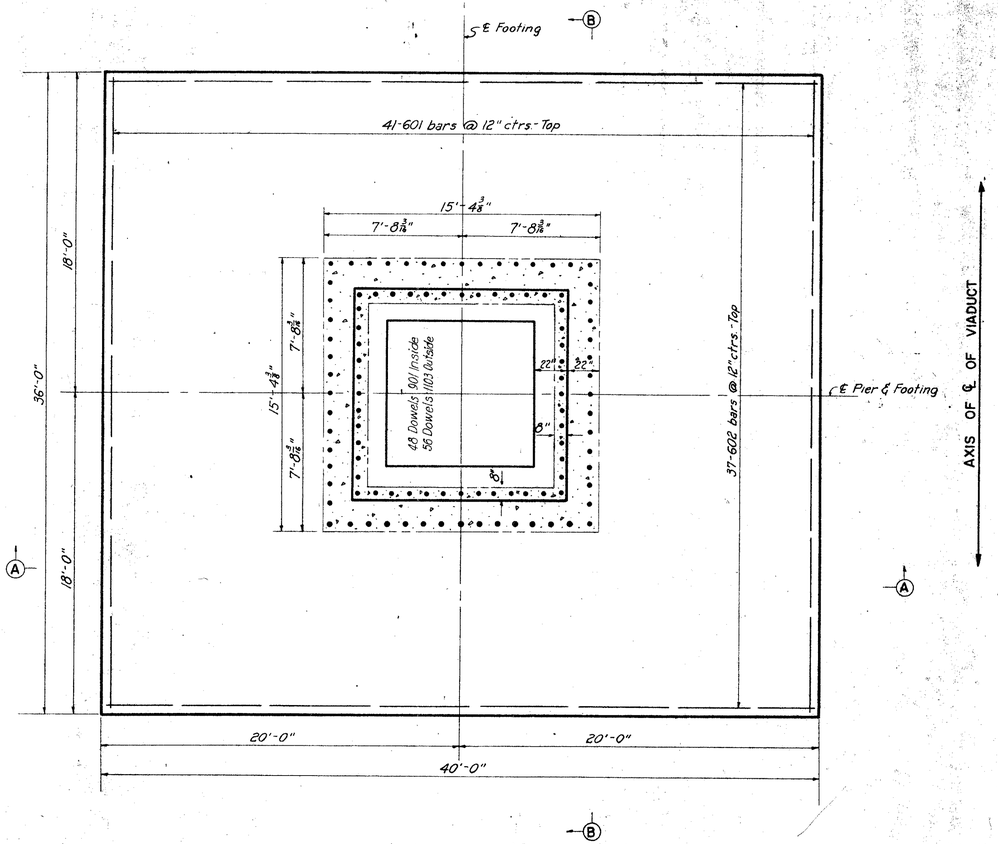
Superseded by Sheet 15A
2-15-55

112

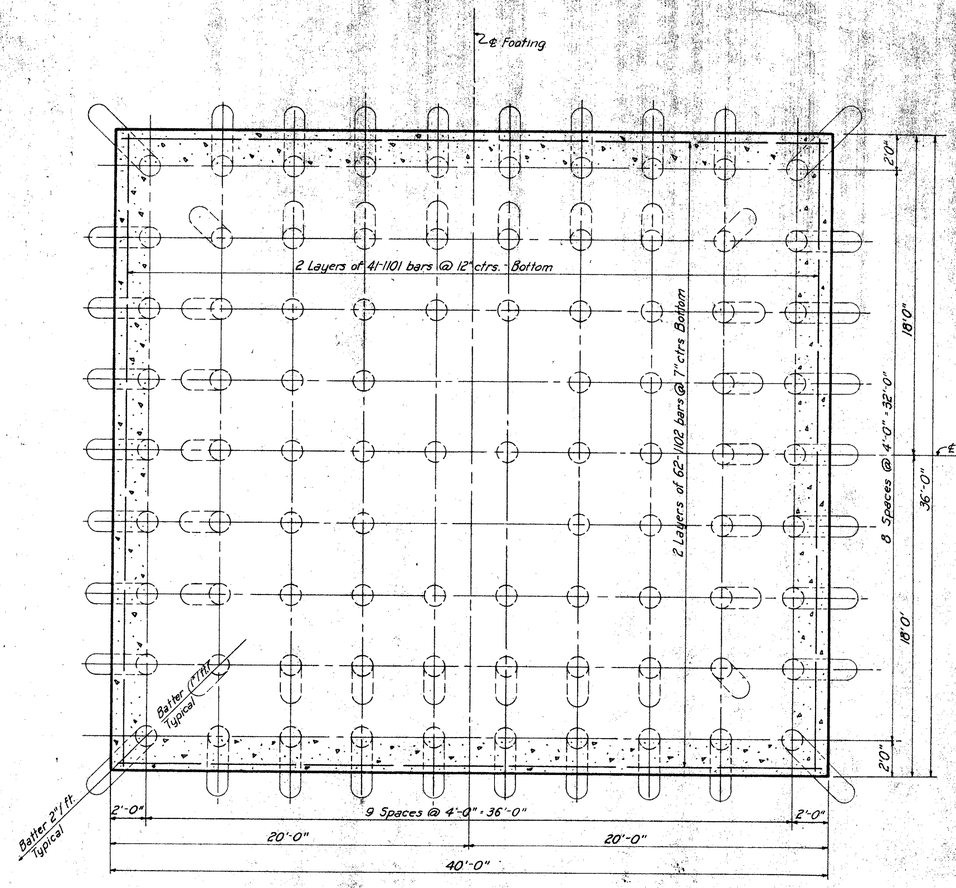
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

154
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

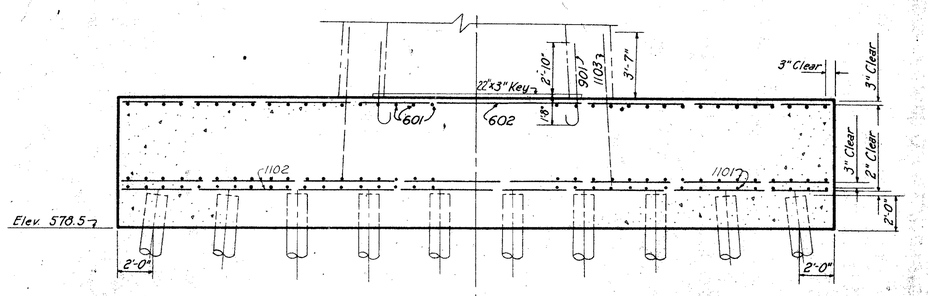


PLAN
Scale: ¼"=1'-0"

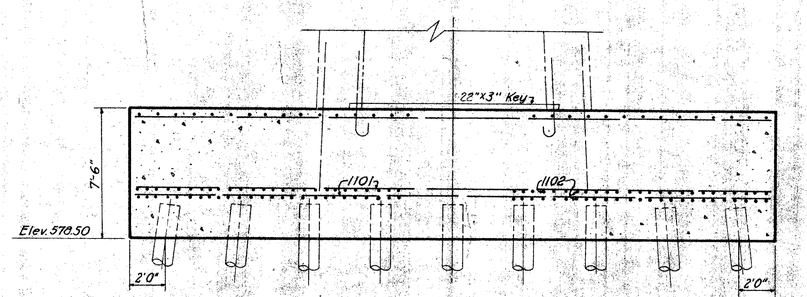


PILE PLAN
Scale: ¼"=1'-0"

Note:
66-14" ϕ Cast-in-Place Reinforced Concrete Piles With a Nominal design capacity of 65 Tons. Estimated Length 90 ft. each. Batter Outside Row of Piles 2" per ft, and Batter Second Row of Piles 1" per ft. for Footing 15 only.
For Reinforcement Schedule See Sheets 30 and 31.
For Footing 1N, batter outside Row of piles 2" per foot on East, South and West sides of footing. Batter second row of piles 1" per ft. all sides and outside row of piles 1" per ft. on North side of footing.



SECTION A-A
Scale: ¼"=1'-0"



SECTION B-B
Scale: ¼"=1'-0"

Supersedes Sheet 15
Revised pile batters. GA 2-15-55

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTINGS 1N, AND 1S

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE as shown
MADE DER DATE 2-8-54
TRCD E.J.B. DATE 6-4-54
CKD C.J.C. DATE 2-25-54

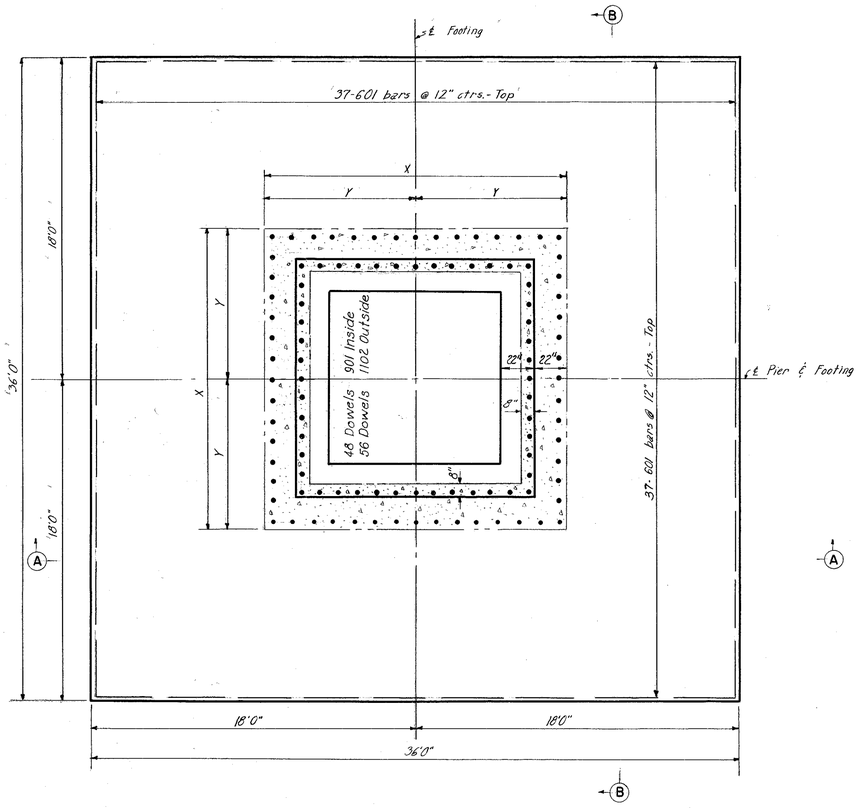
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 1.15

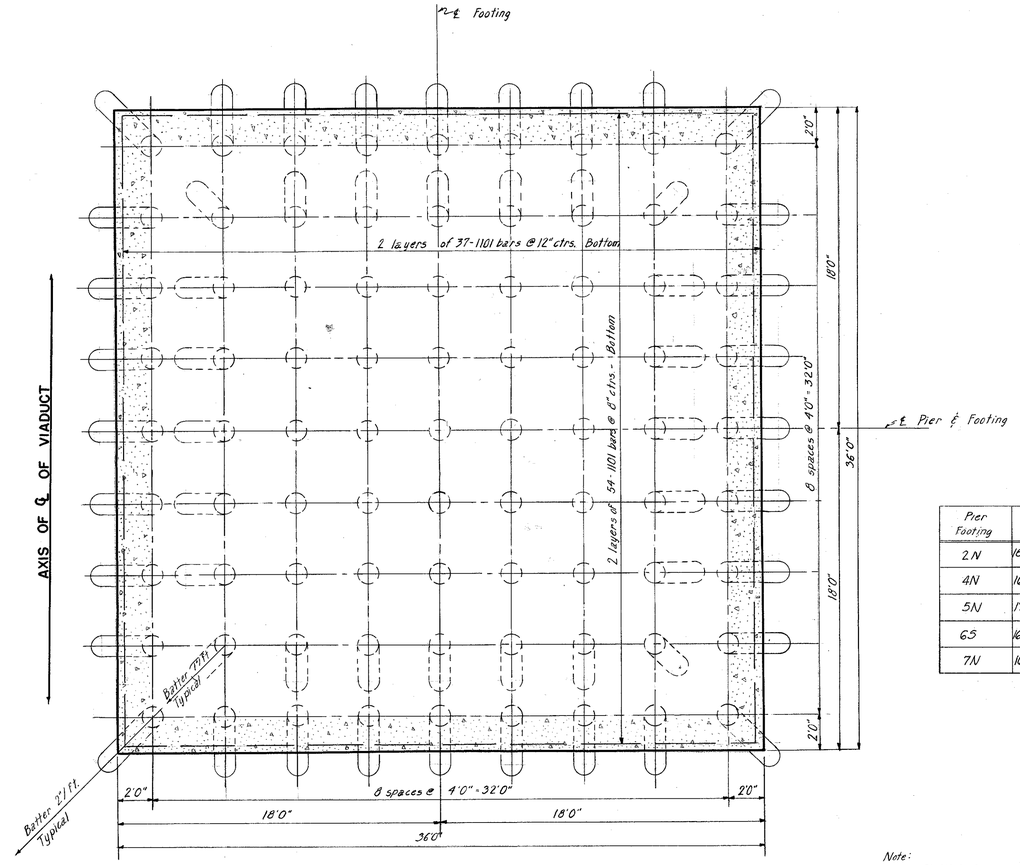
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

16
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



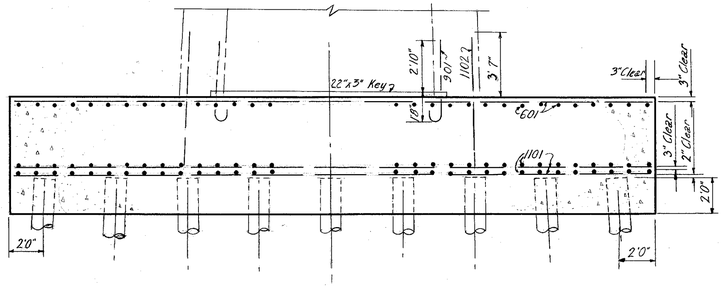
PLAN
Scale 1" = 10'



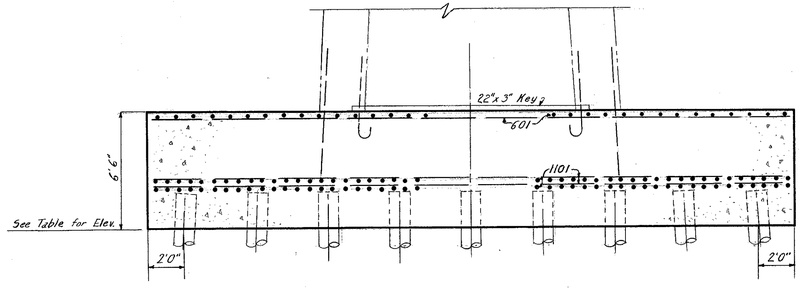
PILE PLAN
Scale 1" = 10'

Pier Footing	X	Y	Bottom of Footing Elev	Estimated Pile Lengths
2N	16'8 3/8"	8'4 3/8"	565.5	90'
4N	16'11 5/8"	8'5 5/8"	567.5	90'
5N	17'1 5/8"	8'6 5/8"	568.5	85'
6S	16'10 3/8"	8'5 3/8"	569.5	80'
7N	16'9 3/8"	8'4 7/8"	568.5	70'

Note:
81-14" ϕ Cast-In-Place Reinforced Concrete Piles with a nominal design capacity of 65 Tons. Batter outside row of piles 2" per Ft, and second row 1" per foot.
For reinforcement schedule, see Shs. 30 and 31.



SECTION A-A
Scale 1" = 10'



SECTION B-B
Scale 1" = 10'

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTINGS 2N, 4N, 5N, 6S, AND 7N

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE as shown
MADE DLB DATE 2-6-54
TRCD. CB DATE 2-7-54
CKD. CJC DATE 2-25-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.16

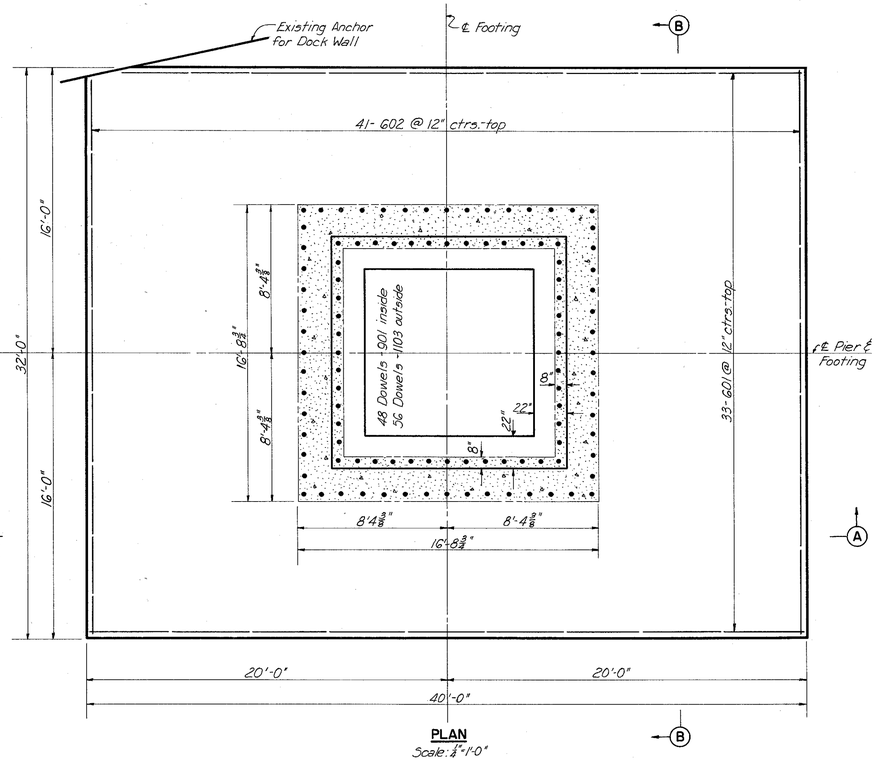
113

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

17
43

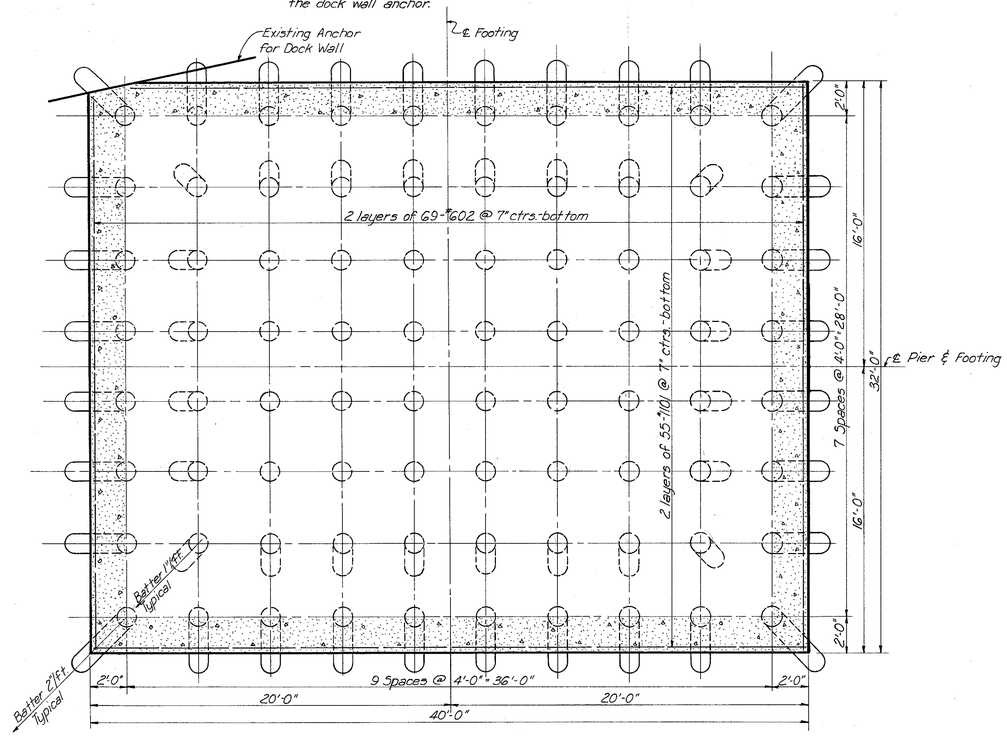
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

Note: Cut or bend reinforcing steel in the field as required to clear the steel pile dock wall.
The exact location of the existing dock wall anchor is not known. After excavation is completed, it may be necessary to move the corner pile in toward the center of the footing. Maintain an edge distance of 1'-9" from the top center of the pile to the surface of concrete poured directly against the dock wall anchor.



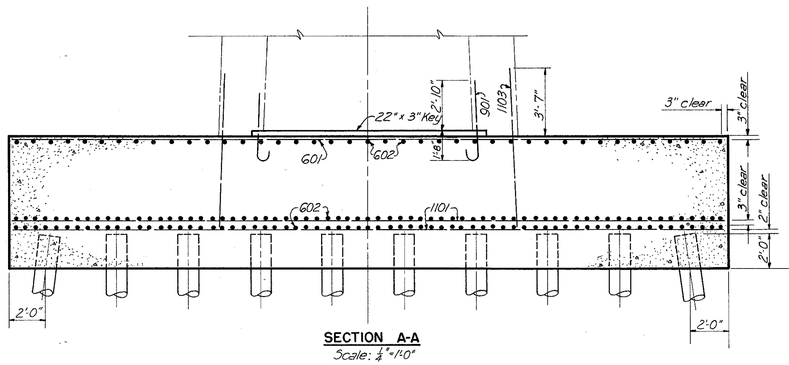
PLAN
Scale: ¼"=1'-0"

AXIS OF ℄ OF VIADUCT

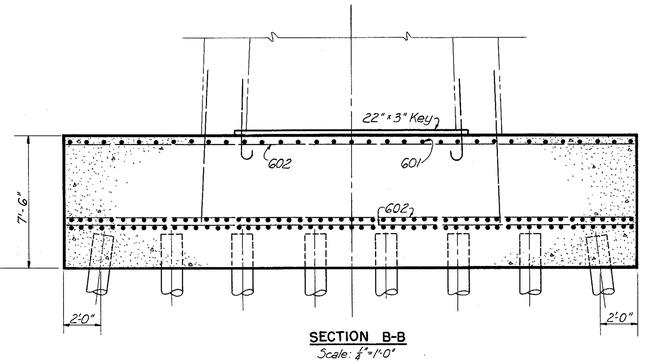


PILE PLAN
Scale: ¼"=1'-0"

Note: 80-14"ϕ cast-in-place reinforced concrete piles with a nominal design capacity of 65 tons each. Estimated length 90 ft. each. Batter outside row of piles 2" per ft, and batter second row of piles 1" per Ft. For reinforcing schedule, see Shs. 30 and 31.



SECTION A-A
Scale: ¼"=1'-0"



SECTION B-B
Scale: ¼"=1'-0"

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTING 2S

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE as shown
MADE O.E.R. DATE 6-9-54
TRCD H.A.M. DATE 6-25-54
CKD V.G.S. DATE 6-28-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

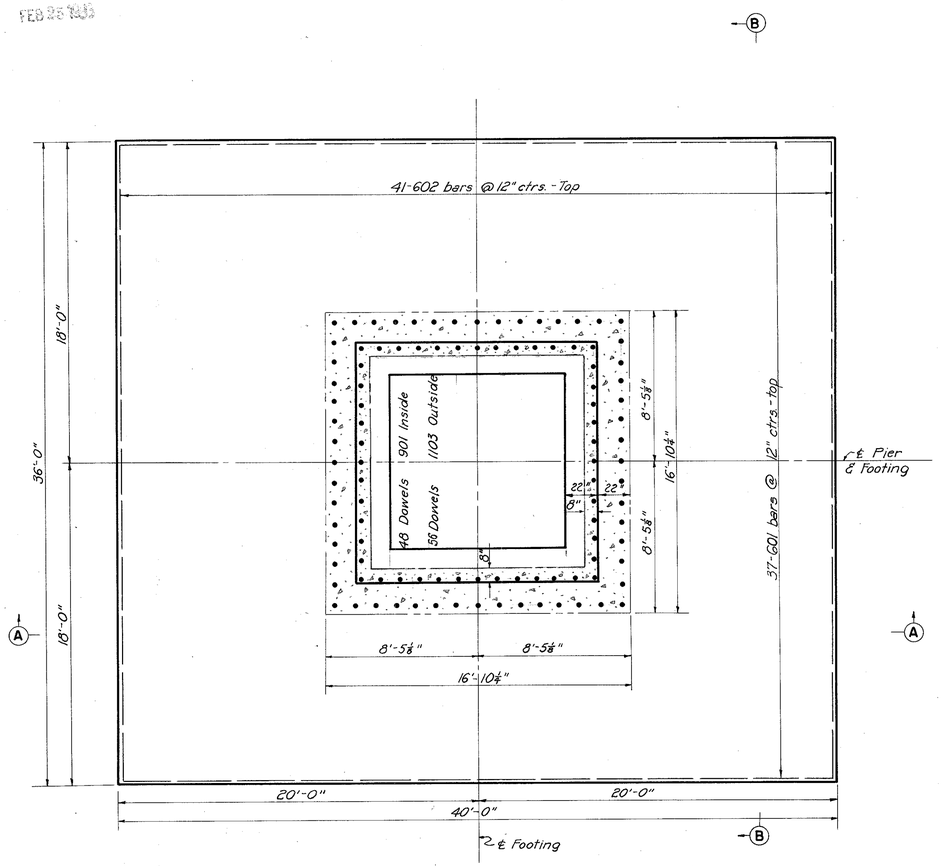
914-1A SHEET- 1.17

137

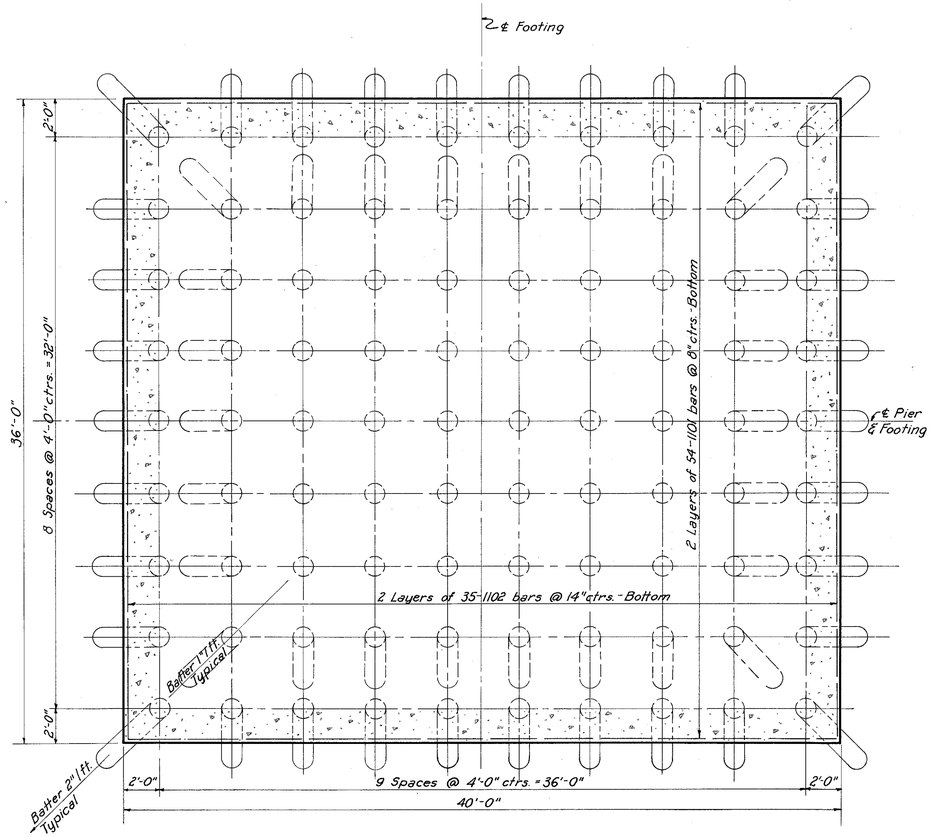
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

18
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

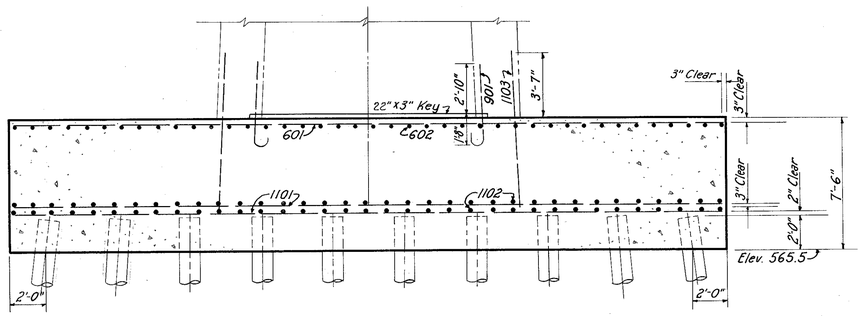


PLAN
Scale: ¼"=1'-0"

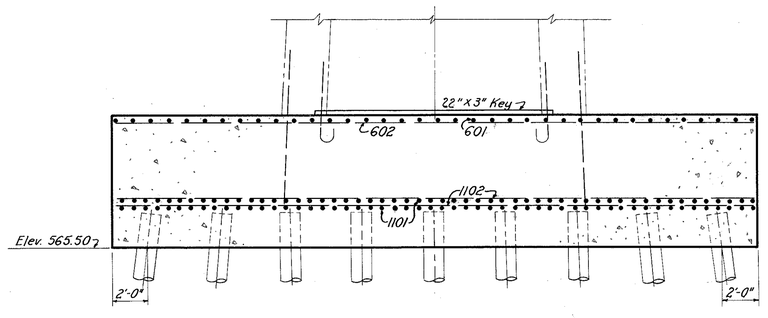


PILE PLAN
Scale: ¼"=1'-0"

Note:
90-14" ϕ Cast-in-Place Reinforced Concrete Piles With a Nominal Design Capacity of 65 Tons for Each Footing. Estimated Length 90 ft. Each. Batter Outside Row of Piles 2" per ft., and Batter Second Row 1" per ft.
For Reinforcement Schedule, see Shs. 30 and 31.



SECTION A-A
Scale: ¼"=1'-0"



SECTION B-B
Scale: ¼"=1'-0"

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTINGS 3N AND 3S

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE as shown
MADE W.E.O. DATE 2-9-54
TRCD E.J.B. DATE 6-7-54
CKD C.J.C. DATE 2-25-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

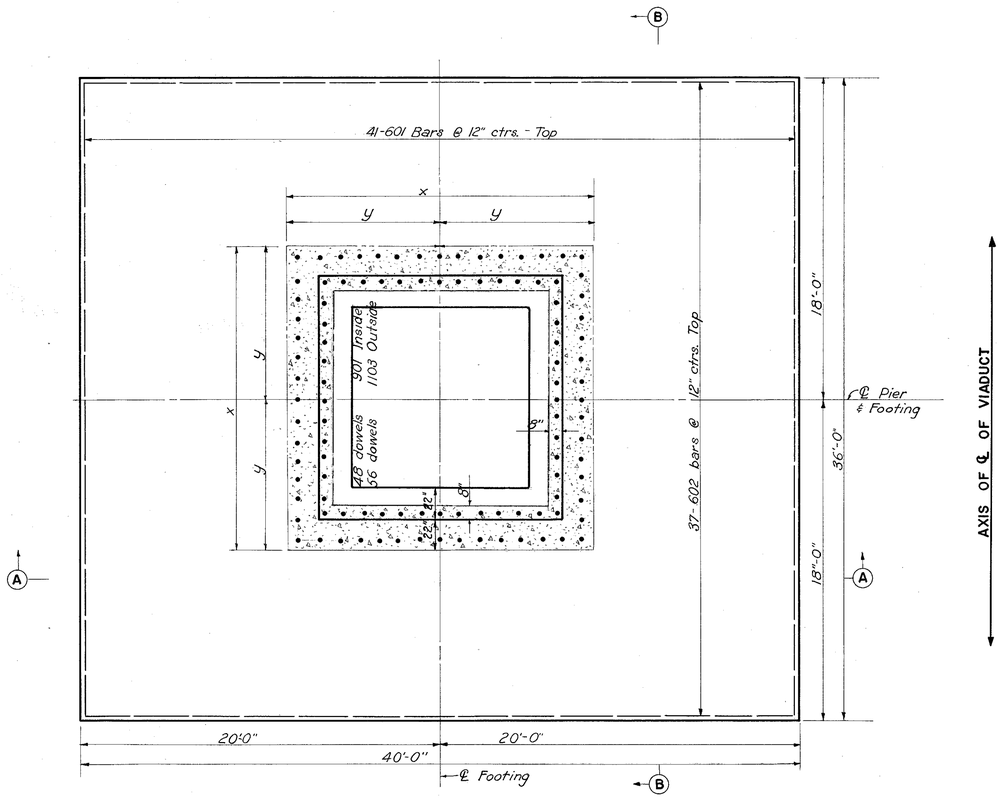
914-1A SHEET- 1.18

114

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

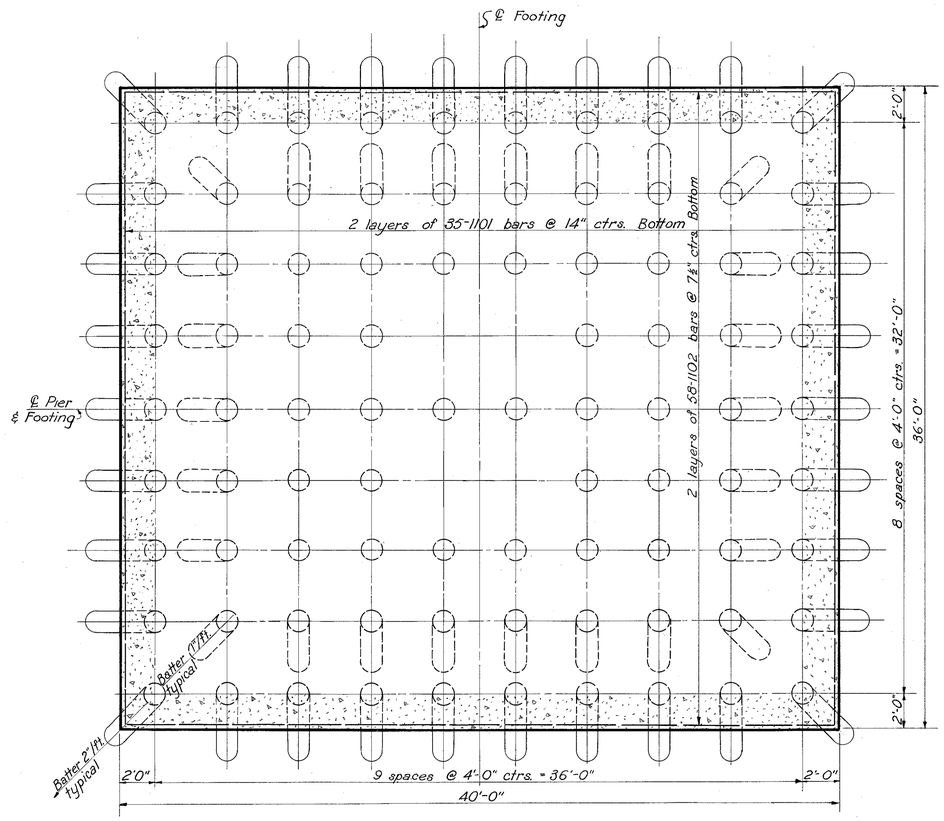
19
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



PLAN
Scale: 1" = 1'-0"

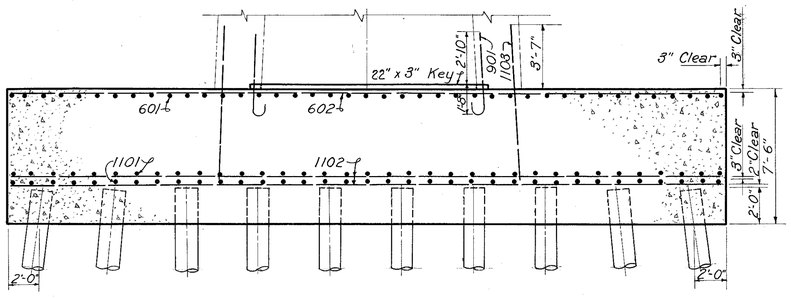
AXIS OF ℄ OF VIADUCT



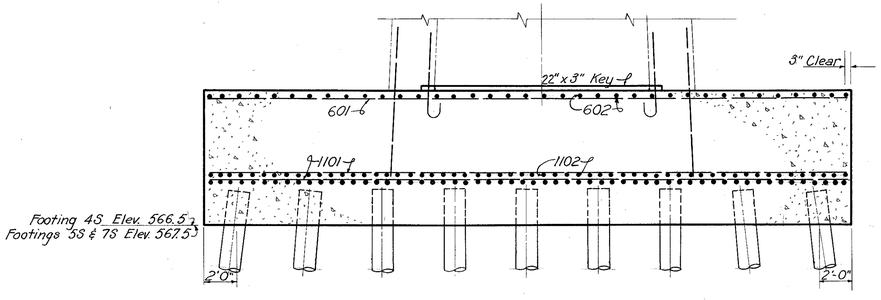
PILE PLAN
Scale: 1" = 1'-0"

Pier Footing	x	y	Estimated pile length
4S	16'-11⅜"	8'-5¼"	90ft.
5S	17'-1⅜"	8'-6⅛"	85ft.
7S	16'-9⅜"	8'-4⅜"	70ft.

Note:
86 - 14" ϕ cast-in-place reinforced concrete piles with a nominal design capacity of 65 tons for each pile. Batter outside row 2" per foot, and batter second row 1" per foot.
For reinforcing schedule see sheets 30 and 31.



SECTION A-A
Scale: 1" = 1'-0"



SECTION B-B
Scale: 1" = 1'-0"

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTINGS 4S, 5S, AND 7S

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As noted
MADE F.G. DATE 2-5-54
TRCD O.H.B. DATE 6-9-54
CKD C.J.C. DATE 2-25-54

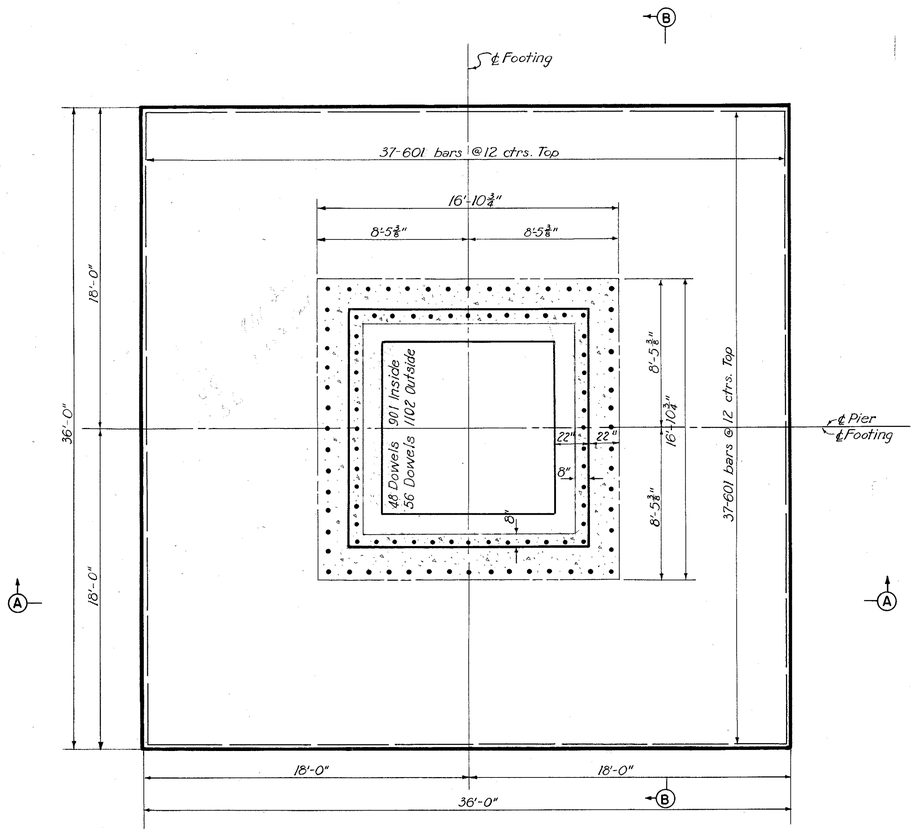
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 1.19

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

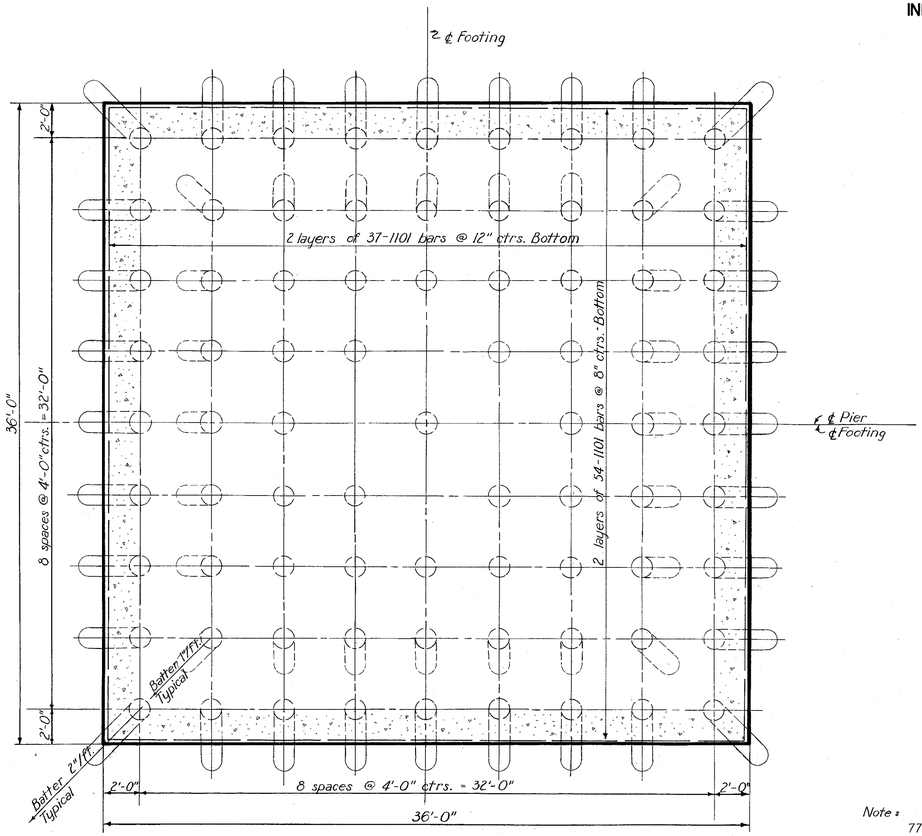
20
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42R - 17.50



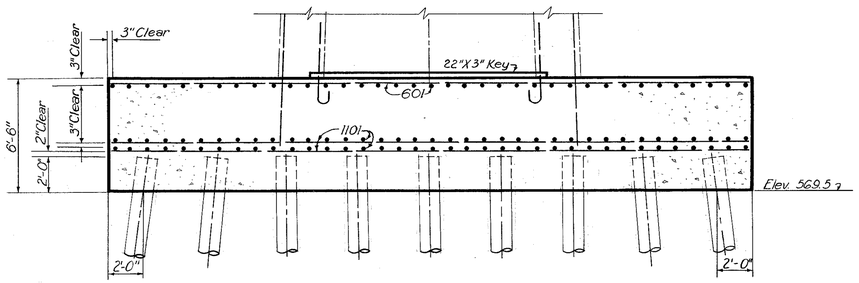
PLAN
Scale: ¼"=1'-0"

AXIS OF ℄ OF VIADUCT

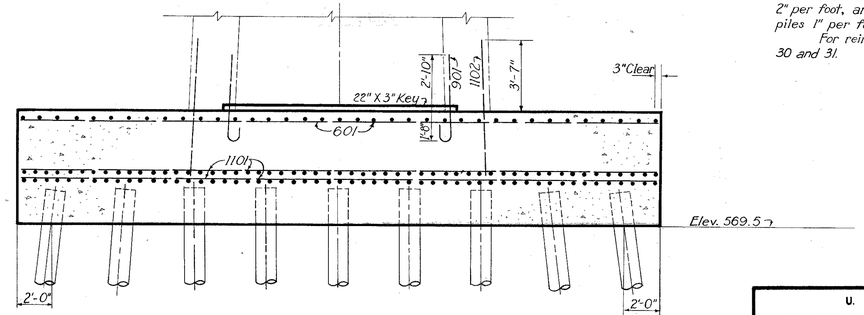


PILE PLAN
Scale: ¼"=1'-0"

Note:
77-14" ϕ cast-in place reinforced concrete piles with a nominal design capacity of 65 tons. Estimated length 60 ft. each. Batter outside row of piles 2" per foot, and batter second row of piles 1" per foot.
For reinforcing schedule see sheets 30 and 31.



SECTION A-A
Scale: ¼"=1'-0"



SECTION B-B
Scale: ¼"=1'-0"

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTING 6N

CLEVELAND CUYAHOGA COUNTY OHIO

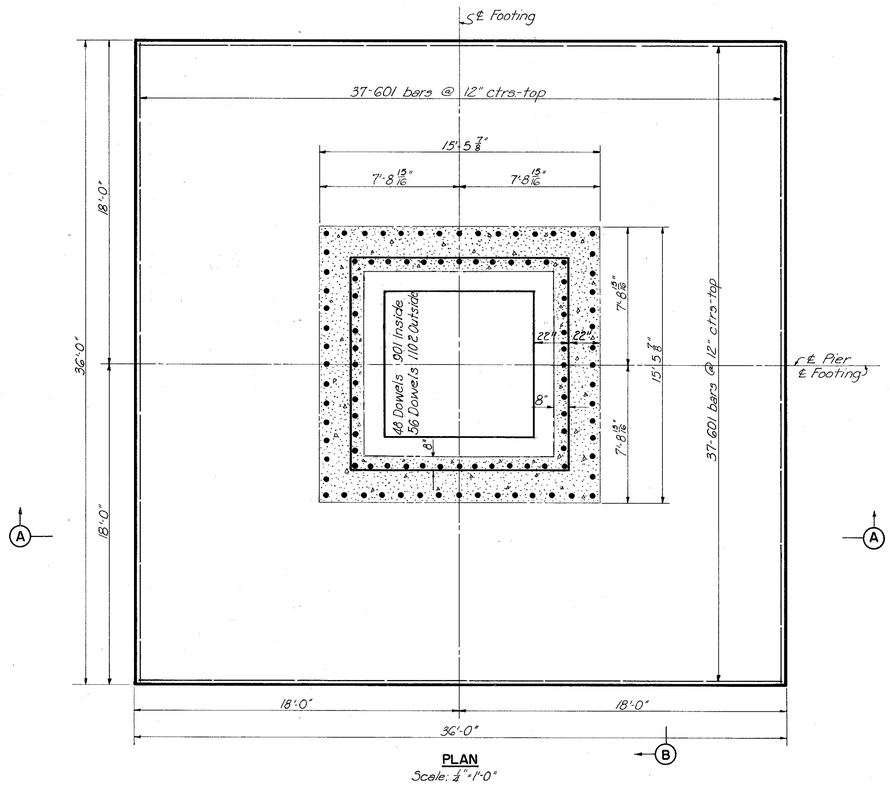
SCALE as shown
MADE WEG DATE 2-5-54
TRCD JAV DATE 6-9-54
CKD CJC DATE 2-25-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET: 1.20

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

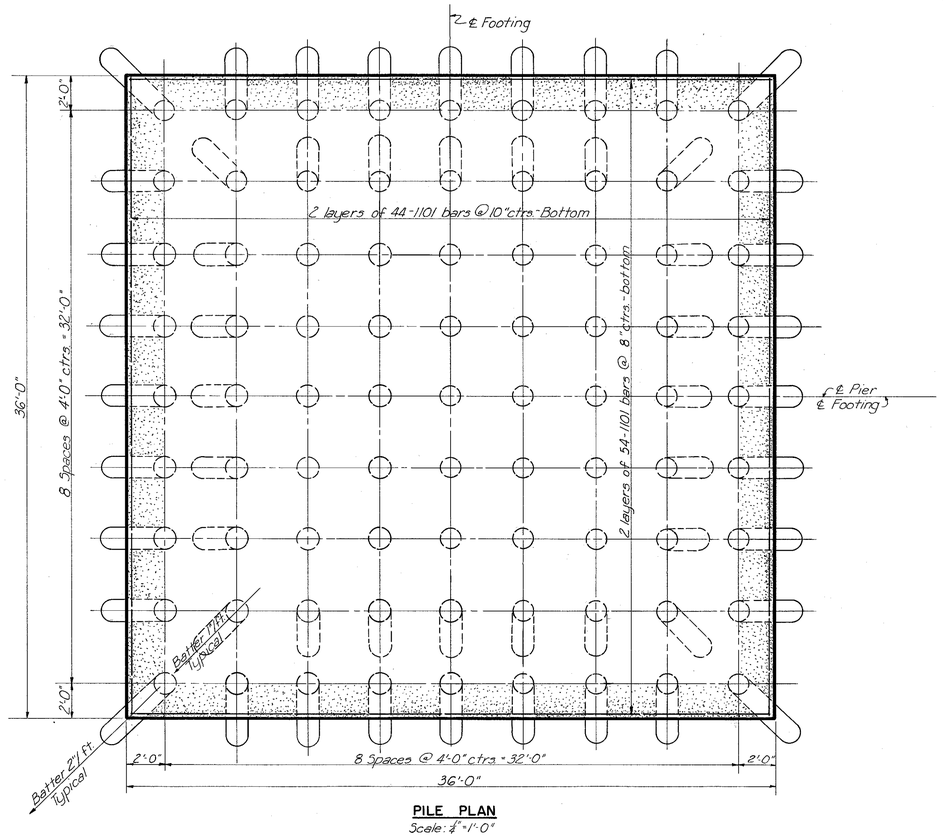
21
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

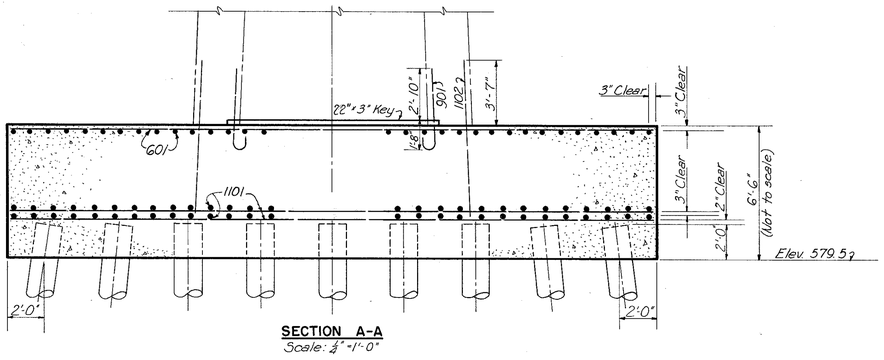


PLAN
Scale: 1/4"=1'-0"

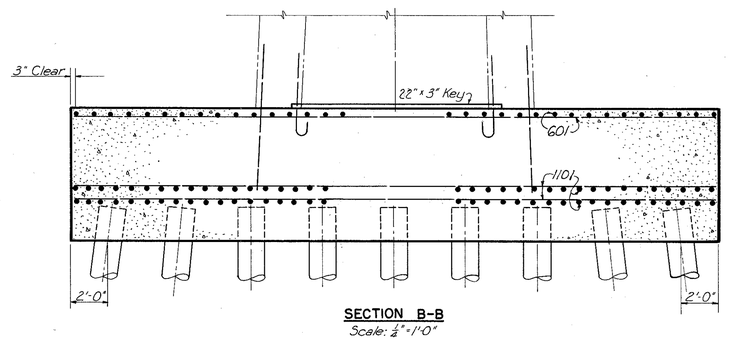
AXIS OF ℄ OF VIADUCT



PILE PLAN
Scale: 1/4"=1'-0"



SECTION A-A
Scale: 1/4"=1'-0"



SECTION B-B
Scale: 1/4"=1'-0"

Note:
81-14" cast-in-place reinforced concrete piles required per footing. Nominal design capacity 65 tons per pile. Estimated length 60 feet each. Batter outside row 2" per foot, and batter second row 1" per foot.
For Reinforcement Schedule, see Shs. 30 and 31.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

PIER FOOTINGS 8N AND 8S

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/4"=1'-0"
MADE W.F.G. DATE 2-10-54
TRCD. M.A.M. DATE 6-7-54
CKD. C.V.C. DATE 2-25-54

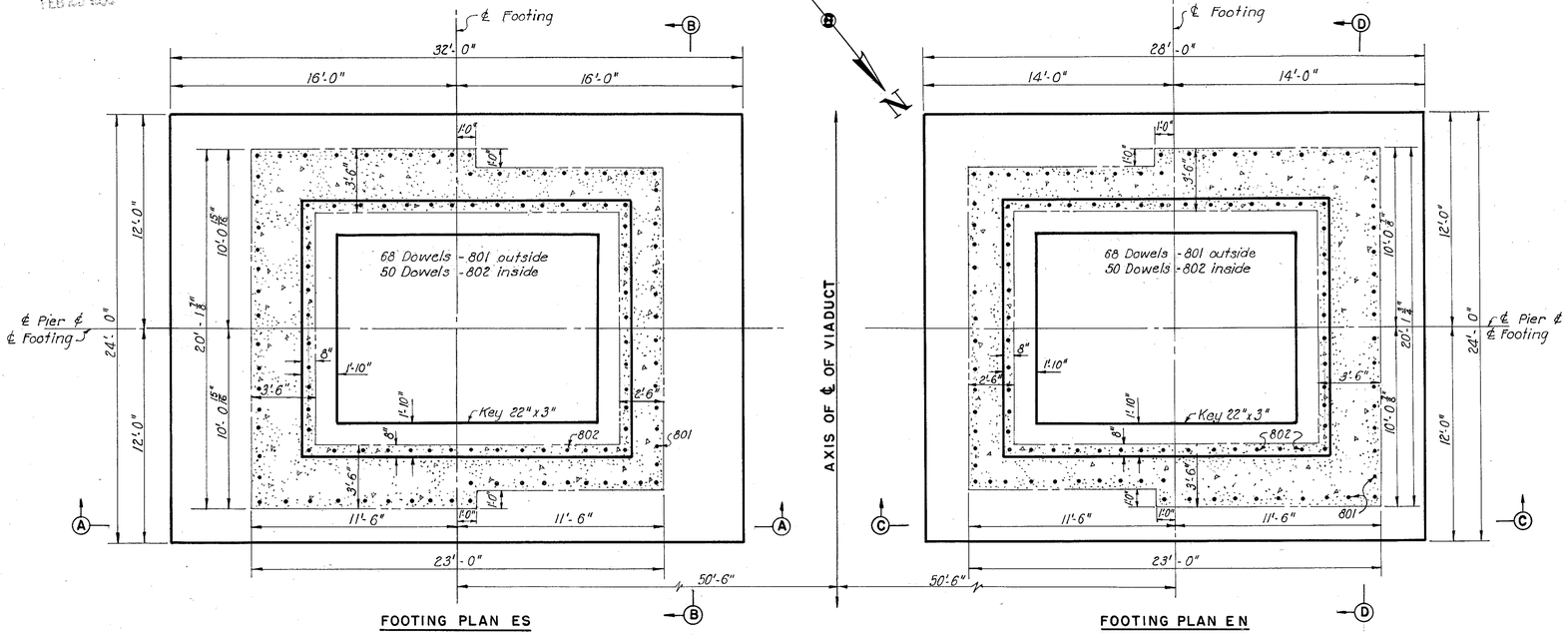
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 1.21

119

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

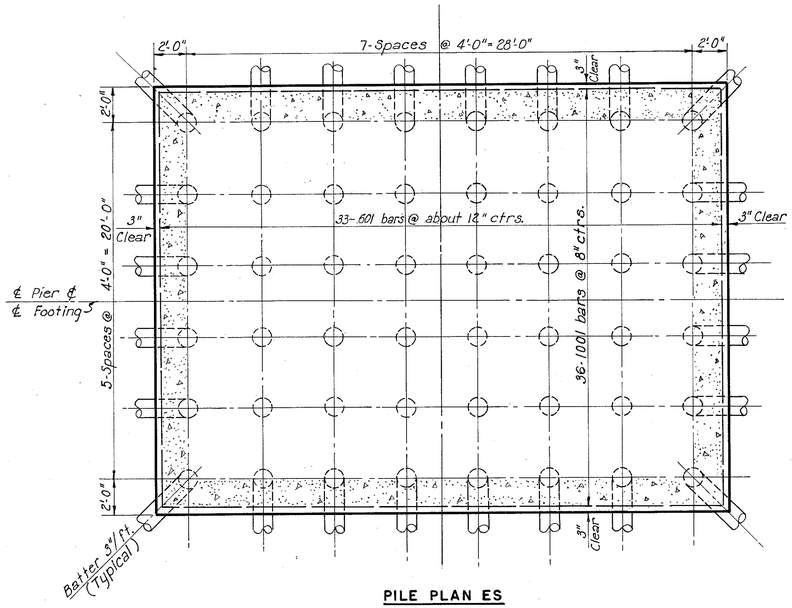
22
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

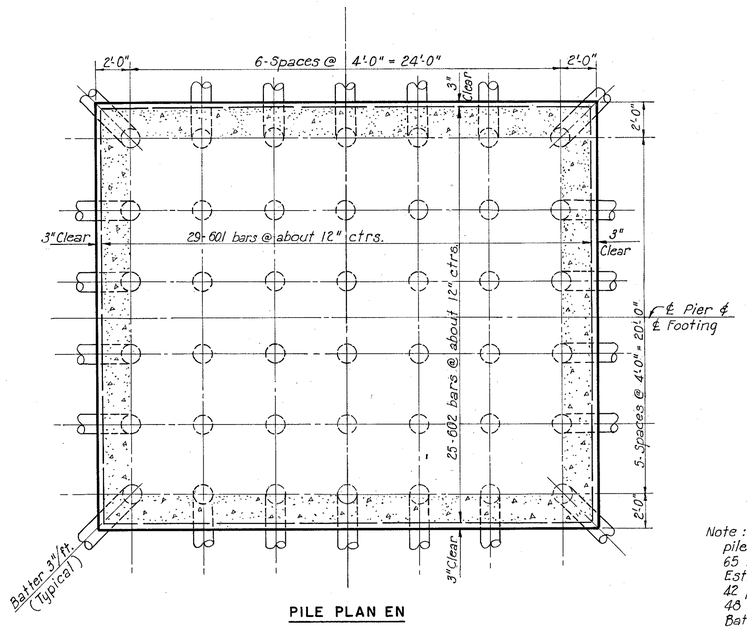


FOOTING PLAN ES

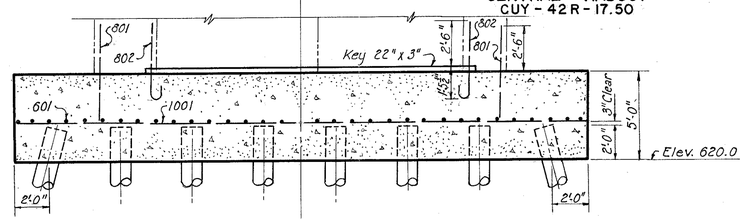
FOOTING PLAN EN



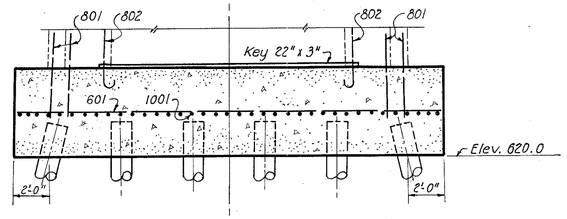
PILE PLAN ES



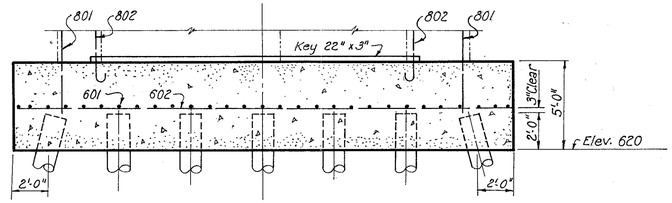
PILE PLAN EN



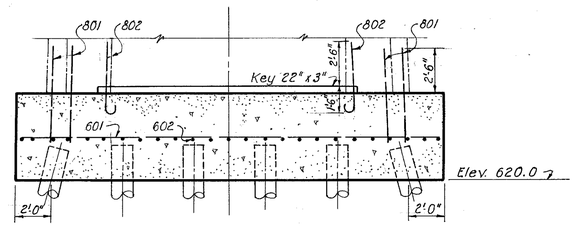
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Note : 14" cast-in-place reinforced concrete piles with a nominal design capacity of 65 tons each.
Estimated length 40 feet each.
42 piles for footing EN.
48 piles for footing ES.
Batter outside row of piles 3" per foot.
For reinforcing schedule, see Sheet 32.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

EAST END PIER FOOTINGS, EN AND ES

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE DER DATE 6-25-54
TRCD AH DATE 6-28-54
CKD. DER DATE 7-6-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

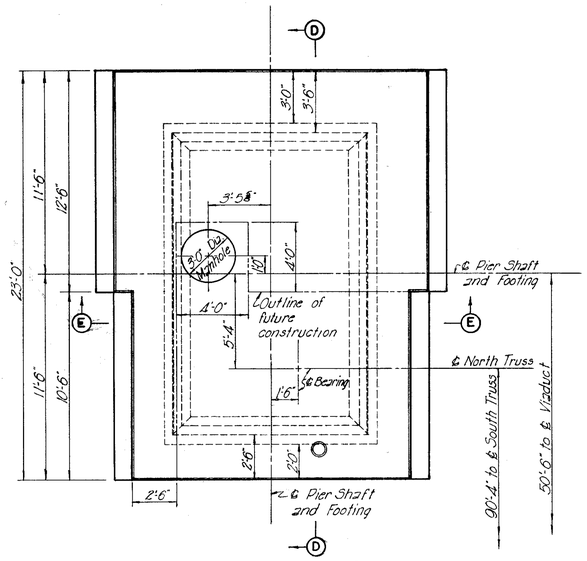
914-1A SHEET- 1.22

120

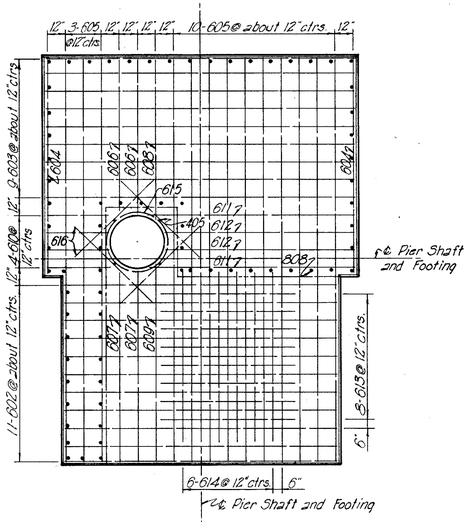
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

23
43

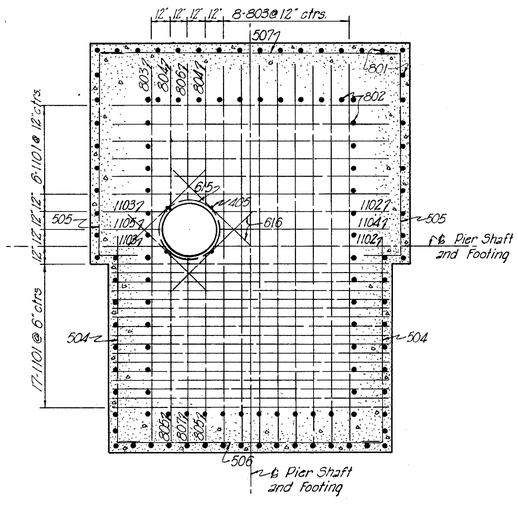
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



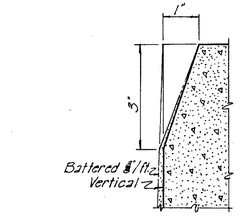
PLAN



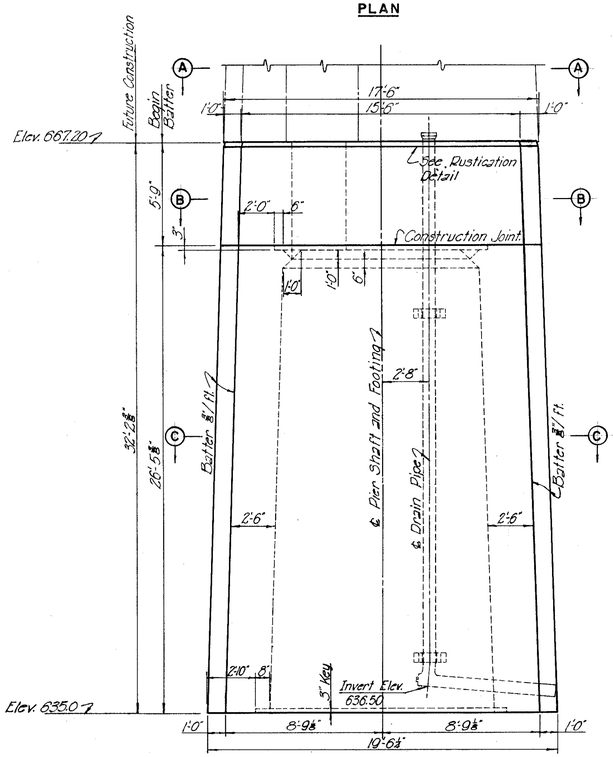
SECTION A-A



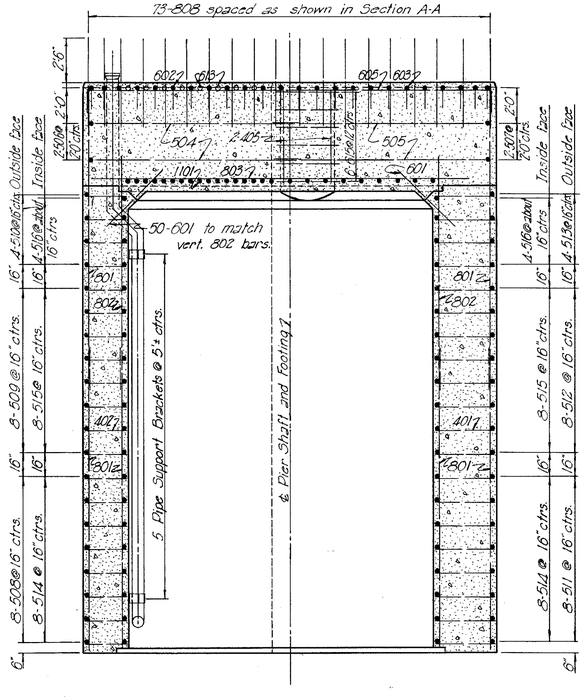
SECTION B-B



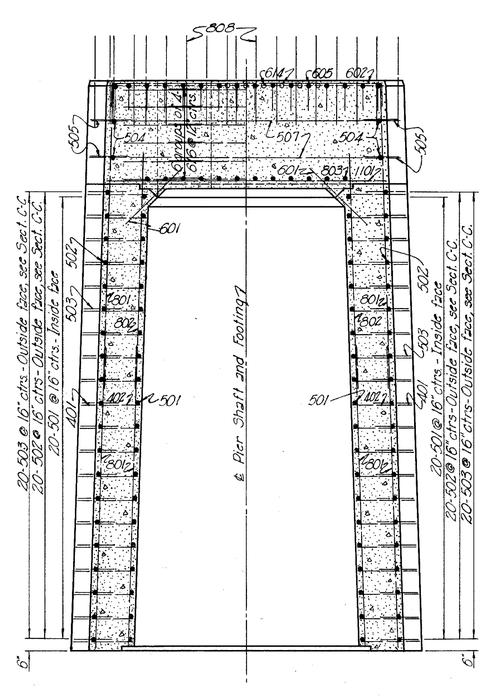
RUSTICATION DETAIL
Scale: 6"=1'-0"



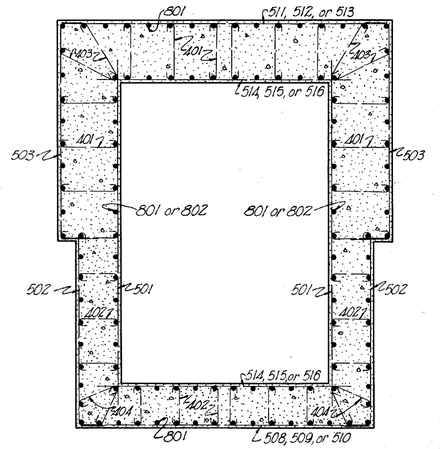
ELEVATION



SECTION D-D



SECTION E-E



SECTION C-C

Note:
801 and 802 bars to be spaced as shown above.

Note:
All bars shall have a minimum clearance of 2" from face of concrete.
For location and details of ladder rungs see Sh. 28.
For details of drain pipe and manhole cover see Sh. 28.
For details of Footing see Sh. 14.
For Reinforcement Schedule see Sh. 32.
For Anchor Bolt Detail and Anchor Bolt Spacing see Sh. 29.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

WEST END PIER SHAFT, WN

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=1'-0" or as Shown
MADE FKD DATE 7-1-54
TRCD. DATE
CKD. CJC DATE 7-7-54

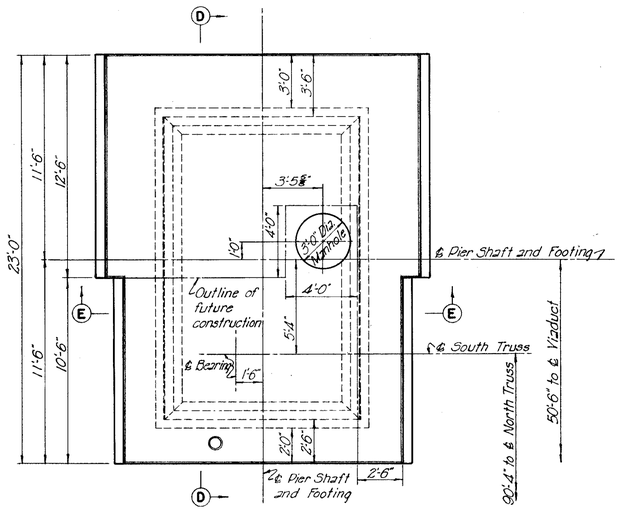
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- I. 23

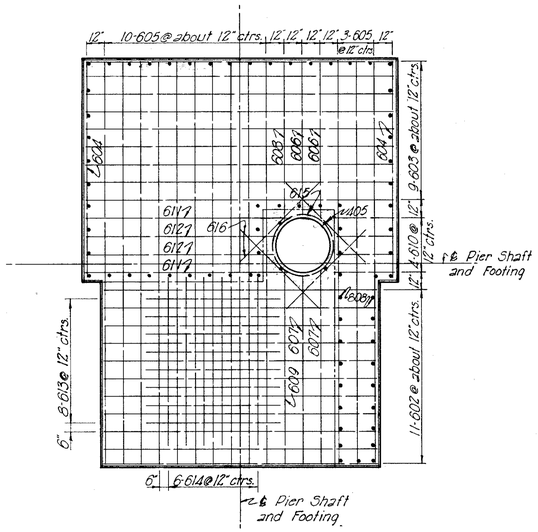
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

24
43

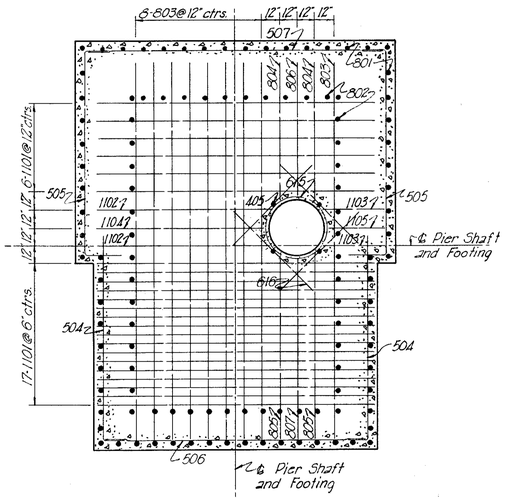
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



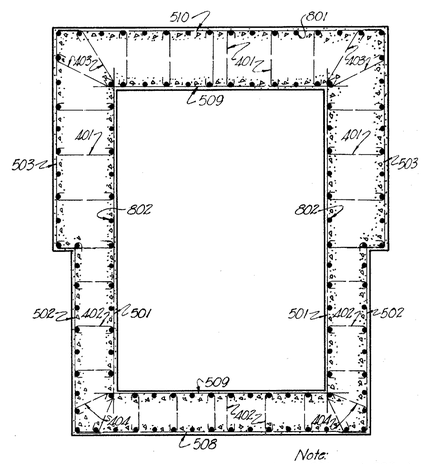
PLAN



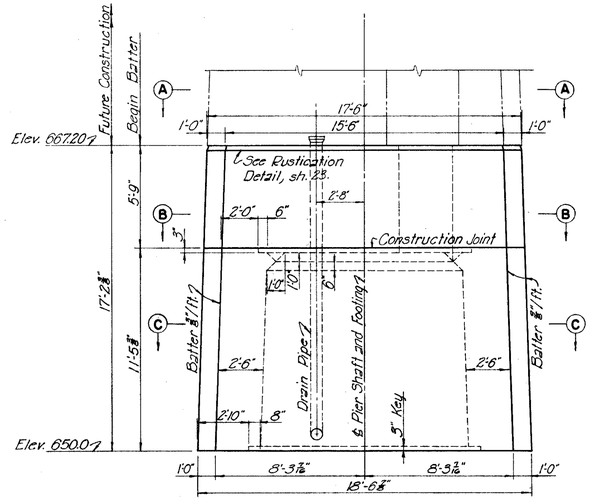
SECTION A-A



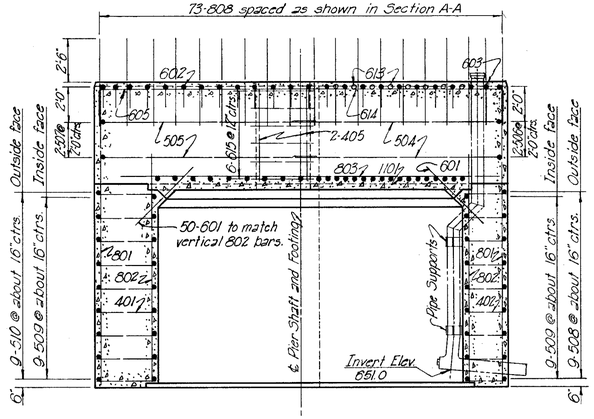
SECTION B-B



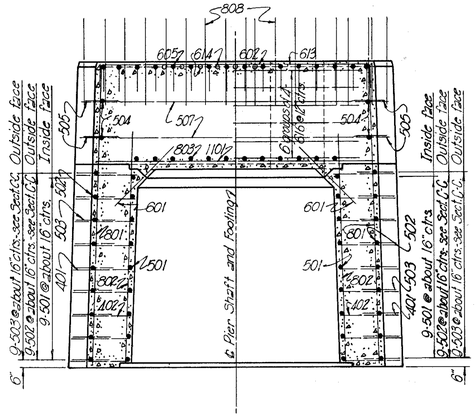
SECTION C-C



ELEVATION



SECTION D-D



SECTION E-E

Note:
All bars shall have a minimum clearance of 2" from face of concrete.
For location and details of ladder rungs see Sh. 28.
For details of drain pipe and manhole cover see Sh. 28.
For details of footing see Sh. 14.
For Reinforcement Schedule see sh. 32.
For Anchor Bolt Detail and Anchor Bolt Spacing see sh. 29.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

WEST END · PIER SHAFT, WS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/4"-1'-0"
MADE FKD DATE 7-6-54
TRCD DATE
CKD CJC DATE 7-7-54

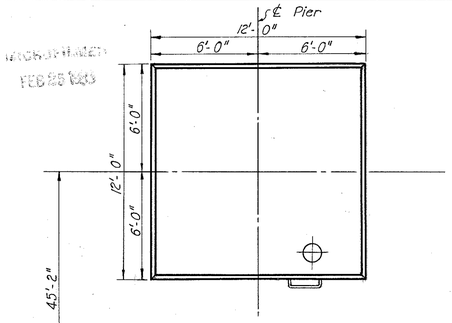
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.24

119

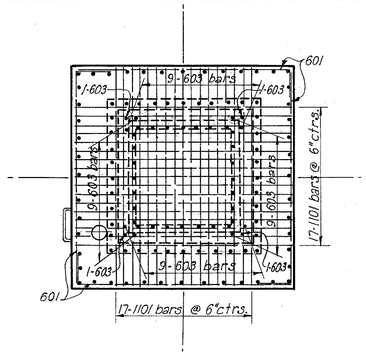
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

25
43

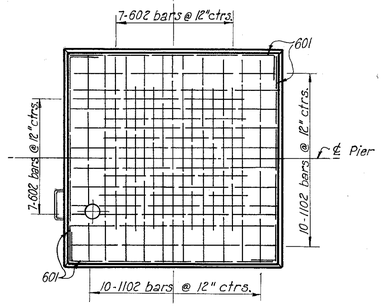
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



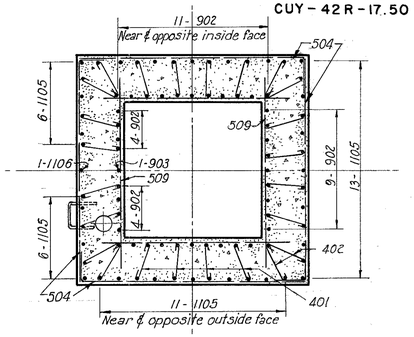
PLAN



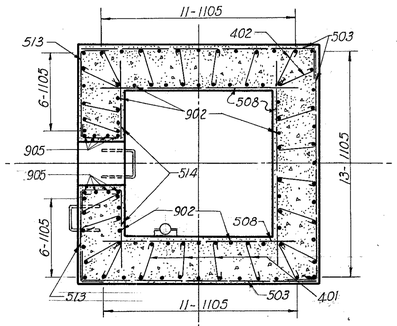
SECTION A-A



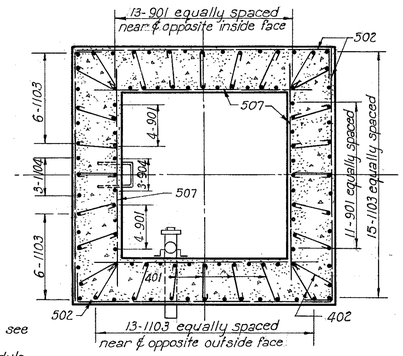
PLAN



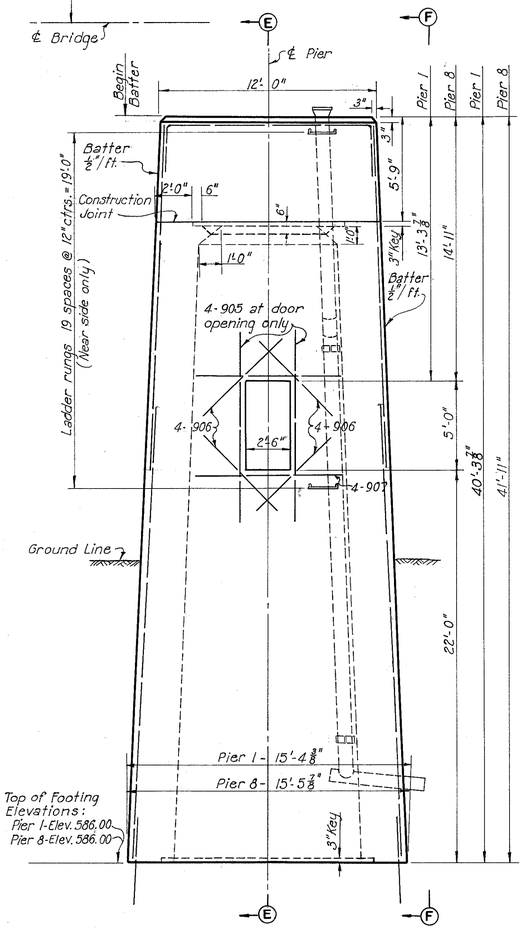
SECTION B-B



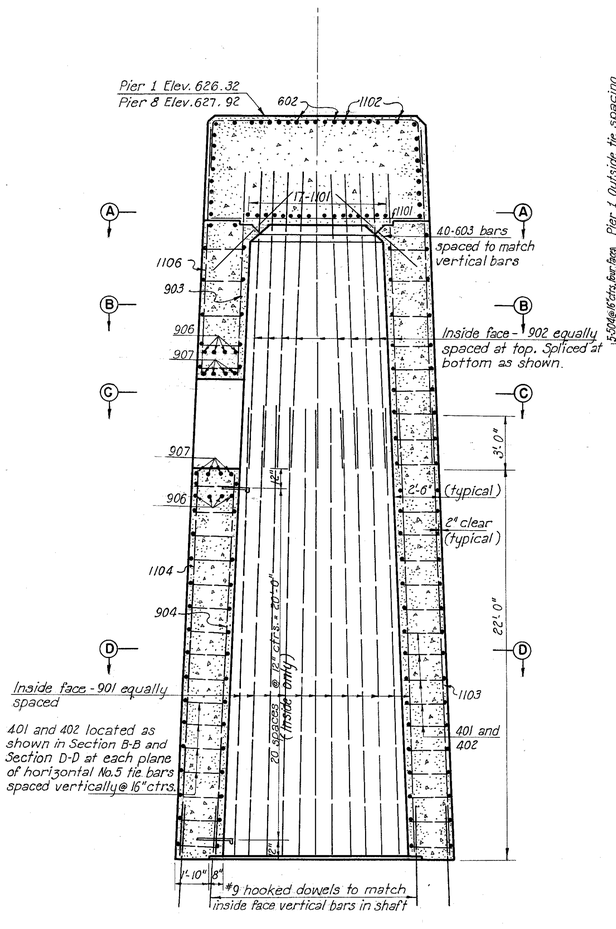
SECTION C-C



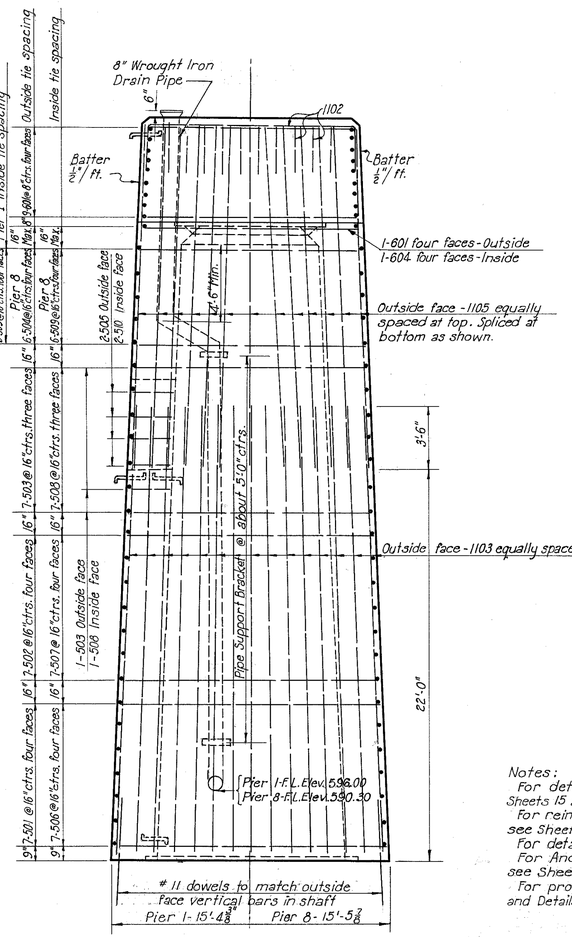
SECTION D-D



ELEVATION
Looking from ℄ Bridge



SECTION E-E



SIDE ELEVATION F-F

Notes:
For details of footings, see Sheets 15 and 21.
For reinforcement schedule, see Sheets 30 and 31.
For details of ladder, see Sheet 28.
For Anchor Bolt Plan and Details see Sheet 29.
For proper location of Drain Pipe and Details, see Sheet 28.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

SHAFTS - PIERS 1 AND 8

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ¼" = 1'-0"
MADE LIB DATE 3-5-54
TRCD AH DATE 6-8-54
CKD. JGS DATE 6-16-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

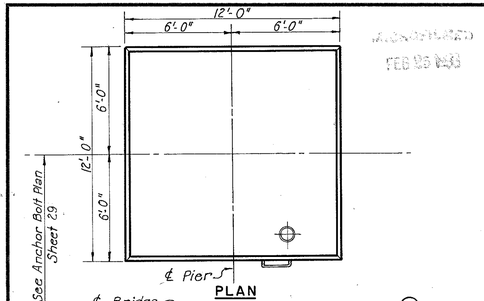
914-1A SHEET 1.25

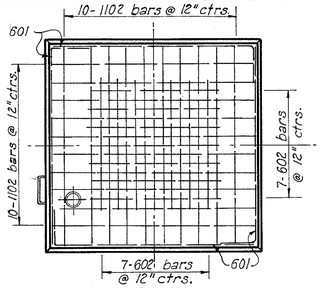
116

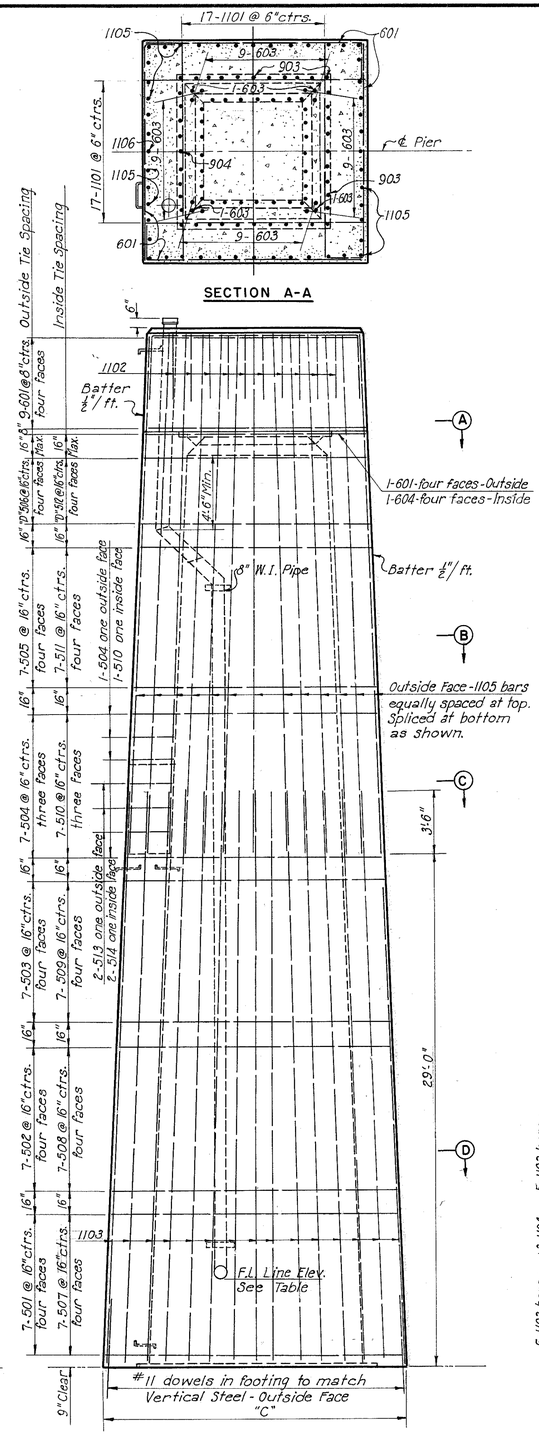
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

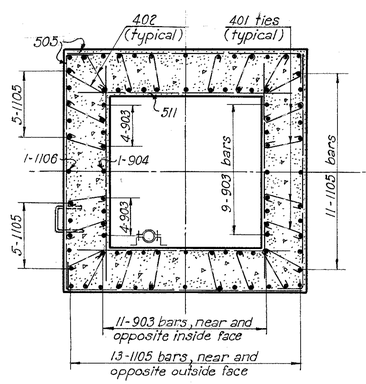
26
43

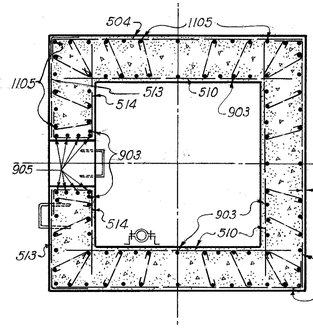
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY CENTRAL VIADUCT
CUY-42R-17.50

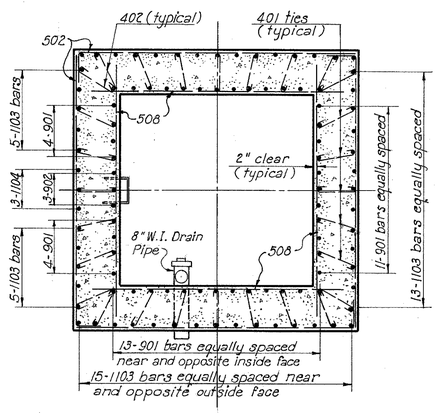












Notes:
For details of footings see Sheets 16 to 20 incl.
For reinforcement schedule, see Sheets 30 & 31.
For details of ladder, see Sheet 28.
For Anchor Bolt Plan and Details, see Sheet 29.
For proper location of Drain Pipe and Details, see Sheet 28.

PIER SHAFT DATA

Pier Shafts	Top Footing Elevation	"A"	"B"	"C"	Pier Top Elevation	Ground Elevation	Flow Line Elevation	"D"
2 N	572.00	16'-9 1/8"	56'-9 1/8"	16'-8 5/4"	628.76	581.00	576.17	3
2 S	572.00	16'-9 1/8"	56'-9 1/8"	16'-8 3/4"	628.76	581.00	576.17	3
3 N	573.00	18'-2 3/4"	58'-2 3/4"	16'-10 1/4"	631.23	582.00	578.00	4
3 S	573.00	18'-2 3/4"	58'-2 3/4"	16'-10 1/4"	631.23	583.00	578.00	4
4 N	574.00	19'-7 3/4"	59'-7 3/4"	16'-11 5/8"	633.64	582.50	579.00	5
4 S	574.00	19'-3 3/4"	59'-3 3/4"	16'-11 3/4"	633.31	584.00	579.00	5
5 N	575.00	21'-7 3/8"	61'-7 3/8"	17'-1 5/8"	636.62	584.00	580.00	7
5 S	575.00	21'-7 3/8"	61'-7 3/8"	17'-1 5/8"	636.62	584.00	580.00	7
6 N	576.00	18'-7 7/8"	58'-7 7/8"	16'-10 3/4"	634.66	585.00	580.00	4
6 S	576.00	18'-7 7/8"	58'-7 7/8"	16'-10 3/4"	634.66	585.00	580.00	4
7 N	575.00	17'-8 1/2"	57'-8 1/2"	16'-9 3/4"	632.70	583.00	579.52	4
7 S	575.00	17'-8 1/2"	57'-8 1/2"	16'-9 3/4"	632.70	585.00	579.13	4

REVISED, DEC 6 1954 | PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
SHAFTS - PIERS 2 THRU 7
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE W E G DATE 3-1-54
TRCD. A H DATE 6-15-54
CKD. J G S DATE 6-17-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- I. 26

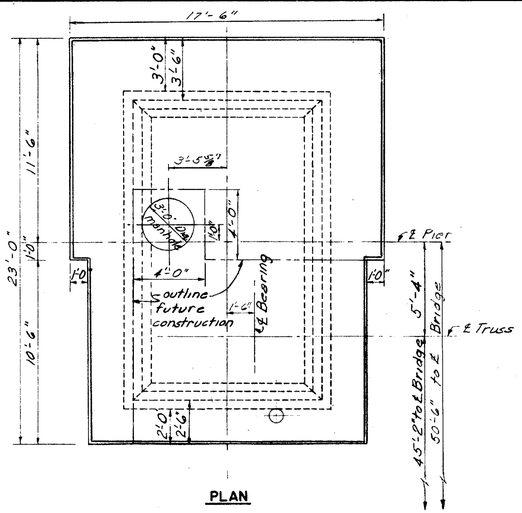
118

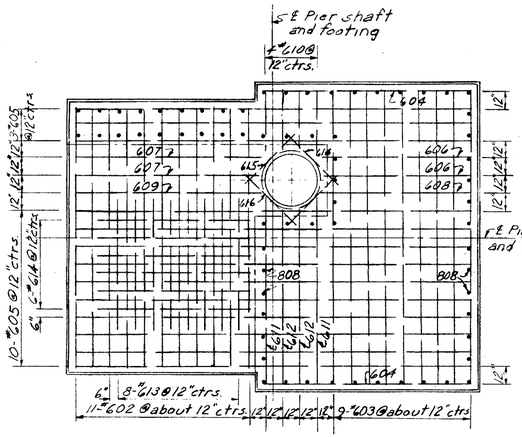
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

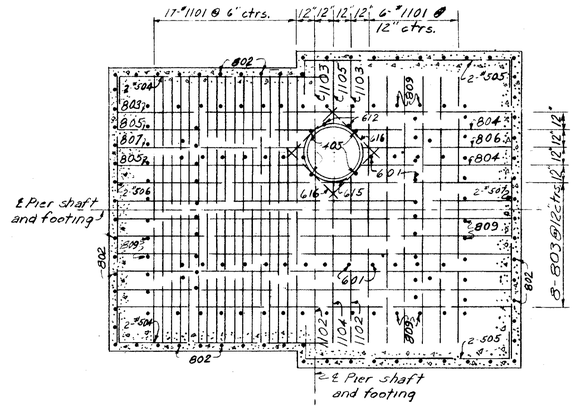
27
43

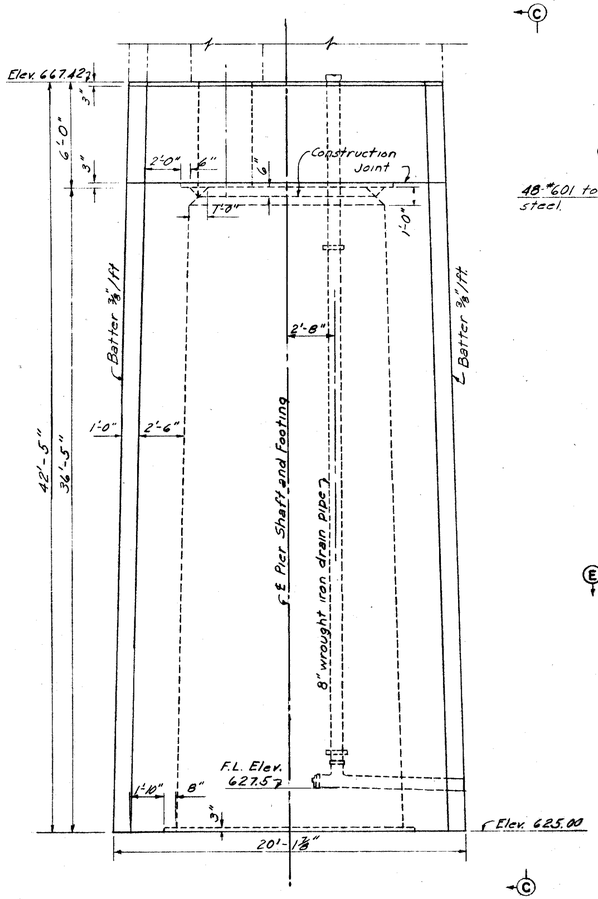
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

PLAN



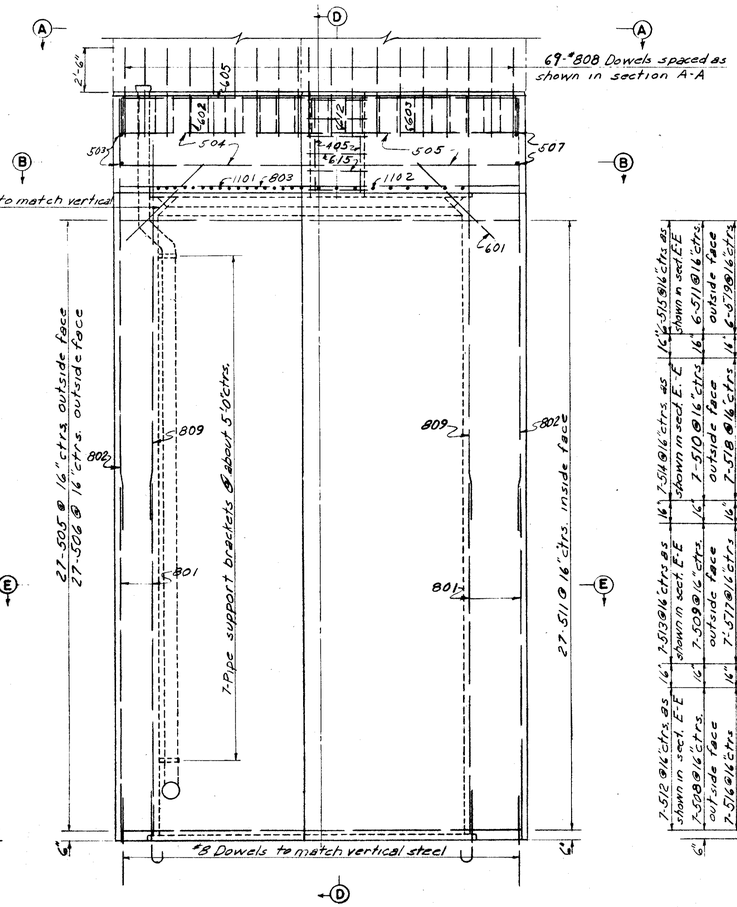






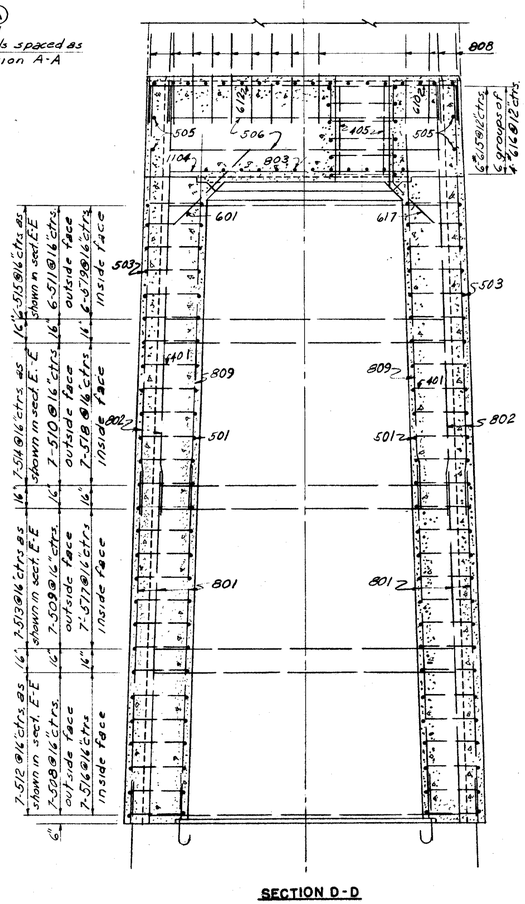
ELEVATION

SECTION A-A

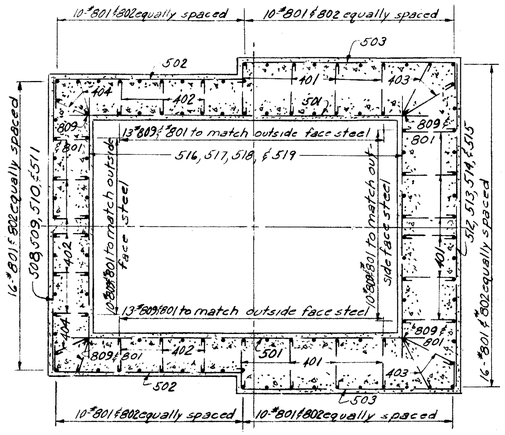


SECTION C-C

SECTION B-B



SECTION D-D



SECTION E-E

Notes:
For details of footings see sheet 22.
For details of iron rungs see sheet 28.
For reinforcement schedule see sheet 32.
For anchor bolt detail and anchor bolt spacing see sheet 29.
For location and direction of drain pipe, see sheets 28 and 35.
For detail of manhole cover see sheet 28.
For location of iron rungs see sheet 28.
For detail of rustication see sheet 23.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

EAST END PIER SHAFTS EN AND ES

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½"=1'-0" MADE DER DATE 7-2-54 TRCD. DATE CKD. GJG DATE 7-9-54

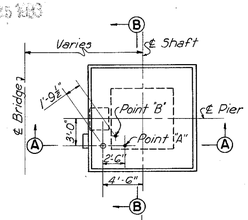
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

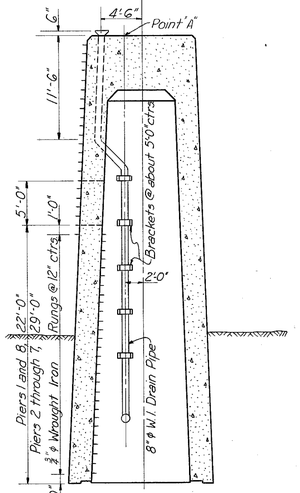
914-1A SHEET 1.27

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

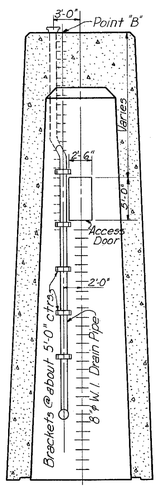
28
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



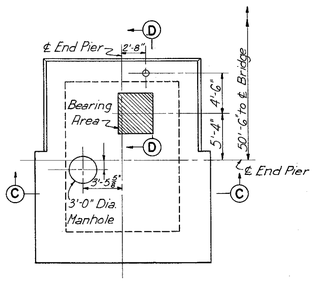


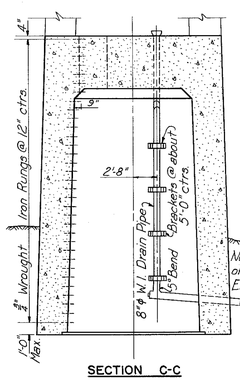
SECTION A-A
CASE 1-PIERS 1N, 4N,
6S, 7S, 8S, 8N



SECTION B-B
CASE 2-PIERS 1S, 2S,
2N, 3S, 3N, 4S, 5S,
5N, 6N, 7N

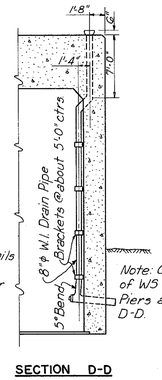
LADDER AND DRAIN PIPE DETAILS
Scale: ½"=1'-0"





SECTION C-C

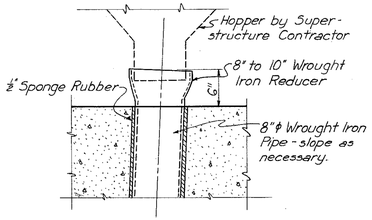
Note: Outlet details of WN and E3 End Piers as per Section C-C.



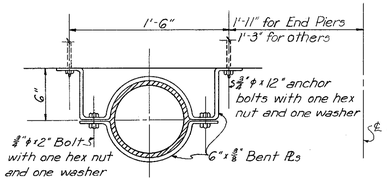
SECTION D-D

Note: Outlet details of WS and E.N End Piers as per Section D-D.

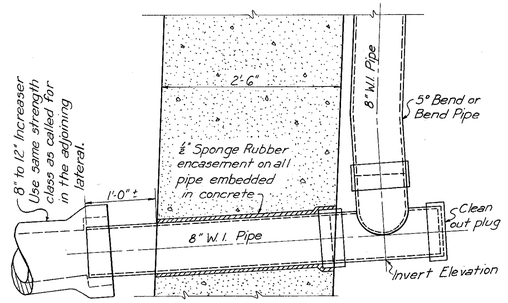
LADDER AND DRAIN PIPE DETAILS - END PIERS
No Scale



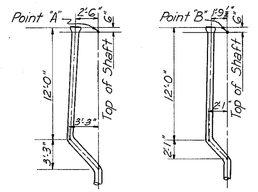
PIPE INLET DETAIL
Scale: 1"=1'-0"



PIPE SUPPORT DETAIL
Scale: 1½"=1'-0"

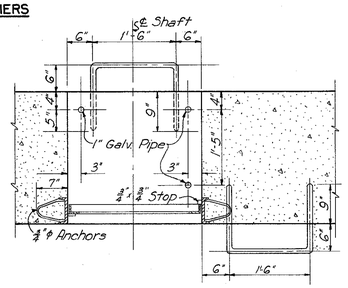


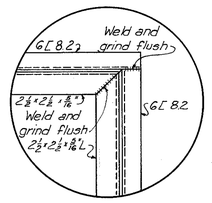
OUTLET DETAIL
Scale: 1"=1'-0"



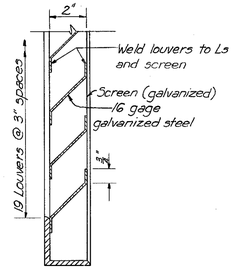
CASE 1 CASE 2

PIPE BENDING DIAGRAMS
Scale: ⅜"=1'-0"

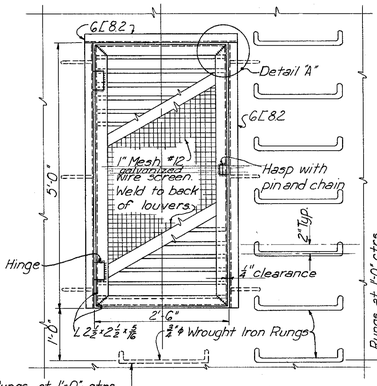




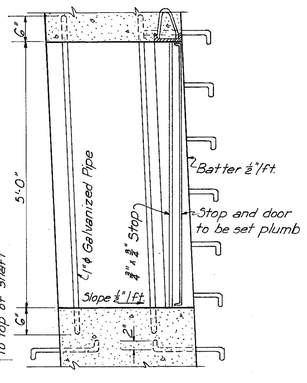
DETAIL "A"
Scale: 1½"=1'-0"

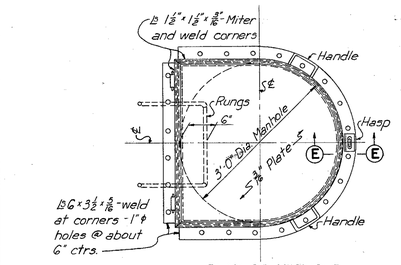


VERTICAL SECTION THROUGH DOOR SHOWING LOUVERS
Scale: 3"=1'-0"

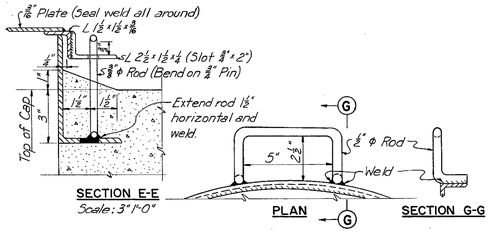


ACCESS DOOR DETAIL
Scale: ½"=1'-0"

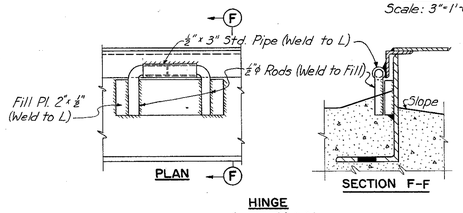




PLAN OF MANHOLE
Scale: ¾"=1'-0"



HANDLE
Scale: 3"=1'-0"



HINGE
Scale: 3"=1'-0"

MANHOLE COVER DETAILS
Scale: as shown

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

MISCELLANEOUS PIER DETAILS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE as shown
MADE D.L.C. DATE 3-9-54
TRCD N.A.M. DATE 7-6-54
CKD C.J.C. DATE 7-7-54

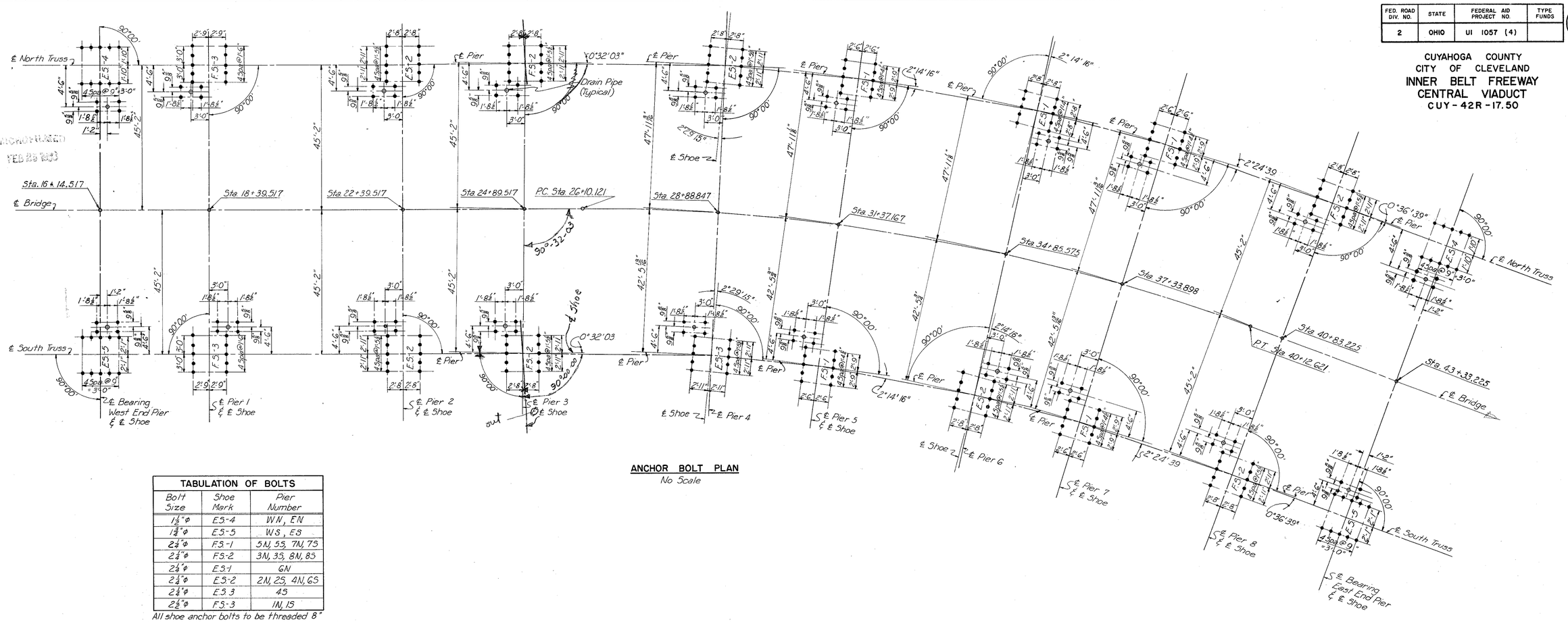
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 128

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

29
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42R - 17.50

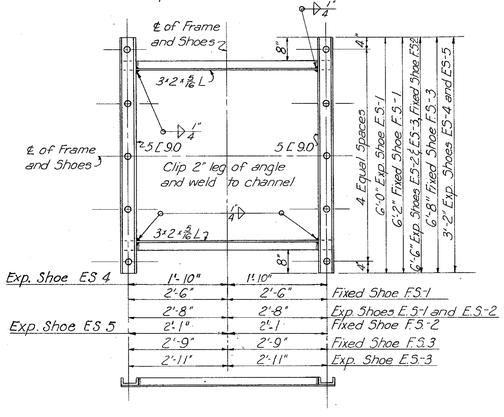


TABULATION OF BOLTS

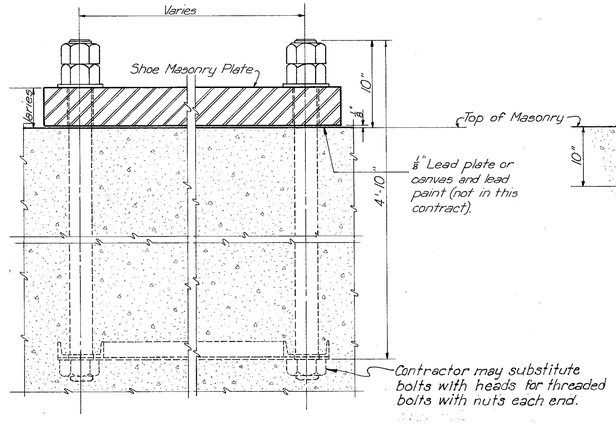
Bolt Size	Shoe Mark	Pier Number
1½"φ	E.S-4	WN, EN
1¾"φ	E.S-5	WS, ES
2¼"φ	F.S-1	5N, 5S, 7N, 7S
2¼"φ	F.S-2	3N, 3S, 8N, 8S
2¼"φ	E.S-1	6N
2¼"φ	E.S-2	2N, 2S, 4N, 6S
2¼"φ	E.S 3	4S
2½"φ	F.S-3	1N, 1S

All shoe anchor bolts to be threaded 8" and provided with lock washer and three hex nuts.

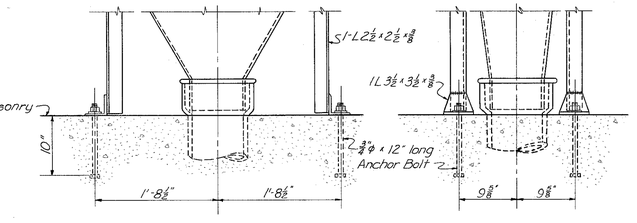
ANCHOR BOLT PLAN
No Scale



ANCHOR BOLT FRAME
Scale: ½" = 1'-0"
Holes in anchor bolt frame to be 1/16" larger than anchor bolt



ANCHOR BOLT DETAIL
Scale: 1½" = 1'-0"



HOPPER ANCHOR BOLT DETAIL
Scale: 1" = 1'-0"

Note: All steel work except anchor bolts by others.

REVISED, DEC. 6, 1954

PART 2

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

ANCHOR BOLT PLAN AND DETAILS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE R.L.C. DATE 3-9-54
TRCD. N.P.M. DATE 6-4-54
CKD. D.E.R. DATE 6-28-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 1.29

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

30
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

PIER FOOTING 1-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	41	35' - 6"	Str.			2,186
602	6	37	39' - 6"	Str.			2,195
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	82	35' + 6"	Str.			15,466
1102	11	124	39' - 6"	Str.			26,023
1103	11	56	9' - 0"	Str.			2,678

PIER FOOTING 1-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	41	35' - 6"	Str.			2,186
602	6	37	39' - 6"	Str.			2,195
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	82	35' - 6"	Str.			15,466
1102	11	124	39' - 6"	Str.			26,023
1103	11	56	9' - 0"	Str.			2,678

PIER FOOTING 2-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	182	35' - 6"	Str.			34,327
1102	11	56	8' - 0"	Str.			2,380

PIER FOOTING 2-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	33	39' - 6"	Str.			1,958
602	6	179	31' - 6"	Str.			8,469
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	110	39' - 6"	Str.			23,085
1102	11	56	9' - 0"	Str.			2,678

PIER FOOTING 3-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	37	39' - 6"	Str.			2,195
602	6	41	35' - 6"	Str.			2,186
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	108	39' - 6"	Str.			22,665
1102	11	70	35' - 6"	Str.			13,203
1103	11	56	9' - 0"	Str.			2,678

PIER FOOTING 3-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	37	39' - 6"	Str.			2,195
602	6	41	35' - 6"	Str.			2,186
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	108	39' - 6"	Str.			22,665
1102	11	70	35' - 6"	Str.			13,203
1103	11	56	9' - 0"	Str.			2,678

PIER FOOTING 4-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	182	35' - 6"	Str.			34,327
1102	11	56	8' - 0"	Str.			2,380

PIER FOOTING 4-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	41	35' - 6"	Str.			2,186
602	6	37	39' - 6"	Str.			2,195
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	70	35' - 6"	Str.			13,203
1102	11	116	39' - 6"	Str.			24,344
1103	11	56	9' - 0"	Str.			2,678

PIER FOOTING 5-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	182	35' - 6"	Str.			34,327
1102	11	56	8' - 0"	Str.			2,380

PIER FOOTING 5-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	41	35' - 6"	Str.			2,186
602	6	37	39' - 6"	Str.			2,195
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	70	35' - 6"	Str.			13,203
1102	11	116	39' - 6"	Str.			24,344
1103	11	56	9' - 0"	Str.			2,678

PIER FOOTING 6-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	182	35' - 6"	Str.			34,327
1102	11	56	8' - 0"	Str.			2,380

PIER FOOTING 6-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	182	35' - 6"	Str.			34,327
1102	11	56	8' - 0"	Str.			2,380

PIER FOOTING 7-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	182	35' - 6"	Str.			34,327
1102	11	56	8' - 0"	Str.			2,380

PIER FOOTING 7-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	41	35' - 6"	Str.			2,186
602	6	37	39' - 6"	Str.			2,195
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	70	35' - 6"	Str.			13,203
1102	11	116	39' - 6"	Str.			24,344
1103	11	56	9' - 0"	Str.			2,678

PIER FOOTING 8-N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	196	35' - 6"	Str.			36,368
1102	11	56	9' - 0"	Str.			2,678

PIER FOOTING 8-S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSION A	DIMENSION B	WEIGHT LBS.
601	6	74	35' - 6"	Str.			3,946
901	9	48	5' - 9"	101	4' - 1"	1'-8"	938
1101	11	196	35' - 6"	Str.			36,968
1102	11	56	9' - 0"	Str.			2,678

PIER SHAFT 8N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	505	3' - 3"	100	1' - 11"		1,097
402	4	216	3' - 4"	100	2' - 0"		481
501	5	28	16' - 7"	104	14' - 2"	2'-5"	484
502	5	28	15' - 11"	104	13' - 6"	2'-5"	464
503	5	24	15' - 1"	104	12' - 8"	2'-5"	378
504	5	24	14' - 4"	104	11' - 11"	2'-5"	359
513	5	8	7' - 4"	104	4' - 11"	2'-5"	61
506	5	28	13' - 6"	Str.			394
507	5	28	12' - 9"	Str.			372
508	5	24	12' - 6"	Str.			300
509	5	24	11' - 3"	Str.			282
514	5	8	8' - 5"	120	4' - 5"	1'-11"	70
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	24' - 9"	Str.			3,787
902	9	39	17' - 0"	Str.			2,255
903	9	1	11' - 9"	Str.			40
904	9	3	21' - 6"	Str.			219
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	25' - 6"	Str.			7,181
1104	11	3	21' - 9"	Str.			347
1105	11	47	19' - 6"	Str.			4,870
1106	11	1	14' - 3"	Str.			75

PIER SHAFT 8S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	505	3' - 3"	100	1' - 11"		1,097
402	4	216	3' - 4"	100	2' - 0"		481
501	5	28	16' - 7"	104	14' - 2"	2'-5"	484
502	5	28	15' - 11"	104	13' - 6"	2'-5"	464
503	5	24	15' - 1"	104	12' - 8"	2'-5"	378
504	5	24	14' - 4"	104	11' - 11"	2'-5"	359
513	5	8	7' - 4"	104	4' - 11"	2'-5"	61
506	5	28	12' - 6"	Str.			394
507	5	28	12' - 9"	Str.			372
508	5	24	12' - 0"	Str.			300
509	5	24	11' - 3"	Str.			282
514	5	8	8' - 5"	120	4' - 5"	1'-11"	70
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	24' - 9"	Str.			3,787
902	9	39	17' - 0"	Str.			2,255
903	9	1	11' - 9"	Str.			40
904	9	3	21' - 6"	Str.			219
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	25' - 6"	Str.			7,181
1104	11	3	21' - 9"	Str.			347
1105	11	47	19' - 6"	Str.			4,870
1106	11	1	14' - 3"	Str.			75

PIER SHAFT 7N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	718	3' - 3"	100	1' - 11"		1,559
402	4	312	3' - 4"	100	2' - 0"		695
501	5	28	17' - 11"	104	15' - 6"	2'-5"	523
502	5	28	17' - 3"	104	14' - 10"	2'-5"	504
503	5	28	16' - 6"	104	14' - 1"	2'-5"	482
504	5	25	15' - 8"	104	13' - 3"	2'-5"	409
505	5	28	14' - 10"	104	12' - 5"	2'-5"	433
506	5	16	14' - 1"	104	11' - 8"	2'-5"	235
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	16	11' - 3"	Str.			188
513	5	6	7' - 9"	104	5' - 4"	2'-5"	48
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	26' - 0"	Str.			3,448
904	9	1	20' - 9"	Str.			70
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	28' - 3"	Str.			7,054
1106	11	1	23' - 3"	Str.			124

PIER SHAFT 7S

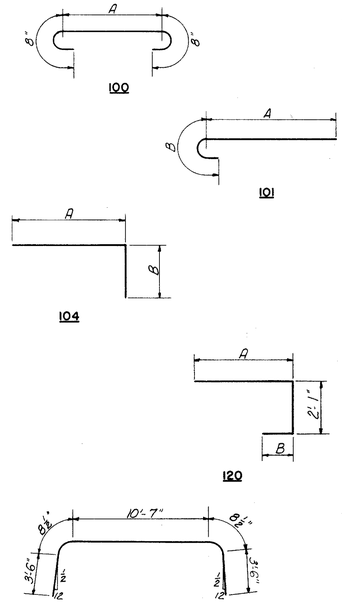
MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	718	3' - 3"	100	1' - 11"		1,559
402	4	312	3' - 4"	100	2' - 0"		695
501	5	28	17' - 11"	104	15' - 6"	2'-5"	523
502	5	28	17' - 3"	104	14' - 10"	2'-5"	504
503	5	28	16' - 6"	104	14' - 1"	2'-5"	482
504	5	25	15' - 8"	104	13' - 3"	2'-5"	409
505	5	28	14' - 10"	104	12' - 5"	2'-5"	433
506	5	16	14' - 1"	104	11' - 8"	2'-5"	235
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	16	11' - 3"	Str.			188
513	5	6	7' - 9"	104	5' - 4"	2'-5"	48
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	26' - 0"	Str.			3,448
904	9	1	20' - 9"	Str.			70
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	28' - 3"	Str.			7,054
1106	11	1	23' - 3"	Str.			124

PIER SHAFT 6N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	718	3' - 3"	100	1' - 11"		1,559
402	4	312	3' - 4"	100	2' - 0"		695
501	5	28	18' - 1"	104	15' - 8"	2'-5"	528
502	5	28	17' - 4"	104	14' - 11"	2'-5"	506
503	5	28	16' - 7"	104	14' - 2"	2'-5"	484
504	5	25	15' - 9"	104	13' - 4"	2'-5"	411
505	5	28	15' - 0"	104	12' - 7"	2'-5"	438
506	5	16	14' - 2"	104	11' - 9"	2'-5"	236
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	16	11' - 3"	Str.			188
513	5	6	7' - 10"	104	5' - 5"	2'-5"	49
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	27' - 0"	Str.			3,580
904	9	1	21' - 9"	Str.			74
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	29' - 3"	Str.			7,304
1106	11	1	24' - 3"	Str.			129

PIER SHAFT 6S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	718	3' - 3"	100	1' - 11"		1,559
402	4	312	3' - 4"	100	2' - 0"		695
501	5	28	18' - 1"	104	15' - 8"	2'-5"	528
502	5	28	17' - 4"	104	14' - 11"	2'-5"	506
503	5	28	16' - 7"	104	14' - 2"	2'-5"	484
504	5	25	15' - 9"	104	13' - 4"	2'-5"	411
505	5	28	15' - 0"	104	12' - 7"	2'-5"	438
506	5	16	14' - 2"	104	11' - 9"	2'-5"	236
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	16	11' - 3"	Str.			188
513	5	6	7' - 10"	104	5' - 5"	2'-5"	49
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	27' - 0"	Str.			3,580
904	9	1	21' - 9"	Str.			74
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	29' - 3"	Str.			7,304
1106	11	1	24' - 3"	Str.			129



BENDING DIAGRAM

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

REINFORCEMENT SCHEDULE

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE No Scale
MADE B.S.B. DATE 3-9-54
TRCD. J.J.S. DATE 6-1-54
CKD. J.G.S. DATE 6-23-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 1.30

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

PIER SHAFT 1N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	489	3' - 3"	100	1' - 11"		1,062
402	4	208	3' - 4"	100	2' - 0"		463
501	5	28	16' - 7"	104	14' - 2"	2'-5"	484
502	5	28	15' - 11"	104	13' - 6"	2'-5"	464
503	5	24	15' - 1"	104	12' - 8"	2'-5"	378
504	5	20	14' - 4"	104	11' - 11"	2'-5"	299
513	5	8	7' - 4"	104	4' - 11"	2'-5"	61
506	5	28	13' - 6"	Str.			394
507	5	28	12' - 9"	Str.			372
508	5	24	12' - 0"	Str.			300
509	5	20	11' - 3"	Str.			235
514	5	8	8' - 5"	120	4' - 5"	1'-1"	71
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	24' - 9"	Str.			3,787
902	9	39	15' - 6"	Str.			2,055
903	9	1	10' - 3"	Str.			35
904	9	3	21' - 6"	Str.			219
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	25' - 6"	Str.			7,181
1104	11	3	21' - 9"	Str.			347
1105	11	47	17' - 9"	Str.			4,442
1106	11	1	12' - 9"	Str.			68

PIER SHAFT 1S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	489	3' - 3"	100	1' - 11"		1,062
402	4	208	3' - 4"	100	2' - 0"		463
501	5	28	16' - 7"	104	14' - 2"	2'-5"	484
502	5	28	15' - 11"	104	13' - 6"	2'-5"	464
503	5	24	15' - 1"	104	12' - 8"	2'-5"	378
504	5	20	14' - 4"	104	11' - 11"	2'-5"	299
513	5	8	7' - 4"	104	4' - 11"	2'-5"	61
506	5	28	13' - 6"	Str.			394
507	5	28	12' - 9"	Str.			372
508	5	24	12' - 0"	Str.			300
509	5	20	11' - 3"	Str.			235
514	5	8	8' - 5"	120	4' - 5"	1'-1"	71
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	24' - 9"	Str.			3,787
902	9	39	15' - 6"	Str.			2,055
903	9	1	10' - 3"	Str.			35
904	9	3	21' - 6"	Str.			219
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	25' - 6"	Str.			7,181
1104	11	3	21' - 9"	Str.			347
1105	11	47	17' - 9"	Str.			4,442
1106	11	1	12' - 9"	Str.			68

PIER SHAFT 2N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	702	3' - 3"	100	1' - 11"		1,525
402	4	304	3' - 4"	100	2' - 0"		677
501	5	28	17' - 11"	104	15' - 6"	2'-5"	523
502	5	28	17' - 2"	104	14' - 9"	2'-5"	501
503	5	28	16' - 5"	104	14' - 0"	2'-5"	480
504	5	25	15' - 8"	104	13' - 3"	2'-5"	409
505	5	28	14' - 11"	104	12' - 6"	2'-5"	436
506	5	12	14' - 0"	104	11' - 7"	2'-5"	175
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 6"	Str.			326
511	5	28	11' - 9"	Str.			343
512	5	12	11' - 0"	Str.			138
513	5	6	7' - 9"	104	5' - 4"	2'-5"	48
514	5	6	8' - 9"	120	4' - 9"	1'-11"	55
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	25' - 0"	Str.			3,315
904	9	1	19' - 9"	Str.			67
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	27' - 3"	Str.			6,805
1106	11	1	22' - 3"	Str.			118

PIER SHAFT 2S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	702	3' - 3"	100	1' - 11"		1,524
402	4	304	3' - 4"	100	2' - 0"		677
501	5	28	17' - 11"	104	15' - 6"	2'-5"	523
502	5	28	17' - 2"	104	14' - 9"	2'-5"	501
503	5	28	16' - 5"	104	14' - 0"	2'-5"	480
504	5	25	15' - 8"	104	13' - 3"	2'-5"	409
505	5	28	14' - 11"	104	12' - 6"	2'-5"	436
506	5	12	14' - 0"	104	11' - 7"	2'-5"	175
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 6"	Str.			326
511	5	28	11' - 9"	Str.			343
512	5	12	11' - 0"	Str.			138
513	5	6	7' - 9"	104	5' - 4"	2'-5"	48
514	5	6	8' - 9"	120	4' - 9"	1'-11"	55
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	25' - 0"	Str.			3,315
904	9	1	19' - 9"	Str.			67
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	27' - 3"	Str.			6,805
1106	11	1	22' - 3"	Str.			118

PIER SHAFT 3N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	718	3' - 3"	100	1' - 11"		1,559
402	4	312	3' - 4"	100	2' - 0"		695
501	5	28	18' - 1"	104	15' - 8"	2'-5"	528
502	5	28	17' - 4"	104	14' - 11"	2'-5"	506
503	5	28	16' - 7"	104	14' - 2"	2'-5"	484
504	5	25	15' - 9"	104	13' - 4"	2'-5"	411
505	5	28	15' - 0"	104	12' - 7"	2'-5"	438
506	5	16	14' - 2"	104	11' - 9"	2'-5"	236
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	16	11' - 3"	Str.			188
513	5	6	7' - 10"	104	5' - 5"	2'-5"	49
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	26' - 6"	Str.			3,514
904	9	1	21' - 3"	Str.			72
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	28' - 9"	Str.			7,179
1106	11	1	23' - 6"	Str.			125

PIER SHAFT 3S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	718	3' - 3"	100	1' - 11"		1,559
402	4	312	3' - 4"	100	2' - 0"		695
501	5	28	18' - 1"	104	15' - 8"	2'-5"	528
502	5	28	17' - 4"	104	14' - 11"	2'-5"	506
503	5	28	16' - 7"	104	14' - 2"	2'-5"	484
504	5	25	15' - 9"	104	13' - 4"	2'-5"	411
505	5	28	15' - 0"	104	12' - 7"	2'-5"	438
506	5	16	14' - 2"	104	11' - 9"	2'-5"	236
507	5	28	15' - 0"	Str.			438
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	16	11' - 3"	Str.			188
513	5	6	7' - 10"	104	5' - 5"	2'-5"	49
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	26' - 6"	Str.			3,514
904	9	1	21' - 3"	Str.			72
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	28' - 9"	Str.			7,179
1106	11	1	23' - 6"	Str.			125

PIER SHAFT 4N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	734	3' - 3"	100	1' - 11"		1,594
402	4	320	3' - 4"	100	2' - 0"		713
501	5	28	18' - 2"	104	15' - 9"	2'-6"	531
502	5	28	17' - 5"	104	15' - 0"	2'-5"	509
503	5	28	16' - 7"	104	14' - 2"	2'-5"	484
504	5	25	15' - 10"	104	13' - 5"	2'-5"	412
505	5	28	15' - 0"	104	12' - 7"	2'-5"	438
506	5	20	14' - 3"	104	11' - 10"	2'-5"	297
507	5	28	15' - 3"	Str.			445
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	20	11' - 3"	Str.			235
513	5	6	7' - 10"	104	5' - 5"	2'-5"	49
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	27' - 9"	Str.			3,680
904	9	1	22' - 0"	Str.			77
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	30' - 0"	Str.			7,491
1106	11	1	25' - 0"	Str.			133

PIER SHAFT 4S

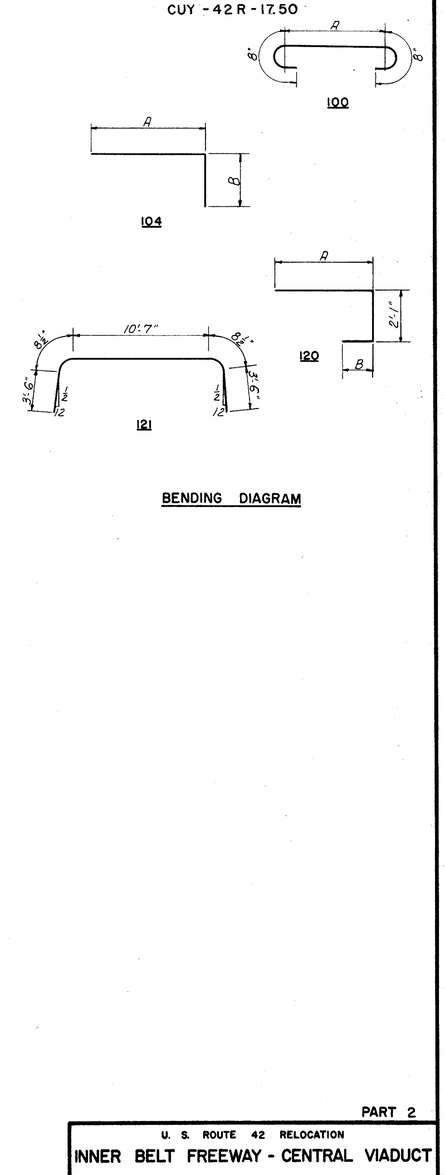
MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	734	3' - 3"	100	1' - 11"		1,594
402	4	320	3' - 4"	100	2' - 0"		713
501	5	28	18' - 2"	104	15' - 9"	2'-6"	531
502	5	28	17' - 5"	104	15' - 0"	2'-5"	509
503	5	28	16' - 7"	104	14' - 2"	2'-5"	484
504	5	25	15' - 10"	104	13' - 5"	2'-5"	412
505	5	28	15' - 0"	104	12' - 7"	2'-5"	438
506	5	20	14' - 3"	104	11' - 10"	2'-5"	297
507	5	28	15' - 3"	Str.			445
508	5	28	14' - 3"	Str.			416
509	5	28	13' - 6"	Str.			394
510	5	25	12' - 9"	Str.			332
511	5	28	12' - 0"	Str.			350
512	5	20	11' - 3"	Str.			235
513	5	6	7' - 10"	104	5' - 5"	2'-5"	49
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	27' - 3"	Str.			3,613
904	9	1	22' - 0"	Str.			75
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	29' - 9"	Str.			7,429
1106	11	1	24' - 9"	Str.			131

PIER SHAFT 5N

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	766	3' - 3"	100	1' - 11"		1,663
402	4	336	3' - 4"	100	2' - 0"		748
501	5	28	18' - 4"	104	15' - 11"	2'-5"	535
502	5	28	17' - 7"	104	15' - 2"	2'-5"	513
503	5	28	16' - 9"	104	14' - 4"	2'-5"	489
504	5	25	16' - 0"	104	13' - 7"	2'-5"	417
505	5	28	15' - 2"	104	12' - 9"	2'-5"	443
506	5	28	14' - 5"	104	12' - 0"	2'-5"	421
507	5	28	15' - 3"	Str.			445
508	5	28	14' - 6"	Str.			423
509	5	28	13' - 9"	Str.			402
510	5	25	13' - 0"	Str.			339
511	5	28	12' - 3"	Str.			358
512	5	28	11' - 6"	Str.			336
513	5	6	7' - 11"	104	5' - 6"	2'-5"	50
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	29' - 9"	Str.			3,945
904	9	1	24' - 9"	Str.			84
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	32' - 3"	Str.			8,053
1106	11	1	27' - 3"	Str.			145

PIER SHAFT 5S

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	766	3' - 3"	100	1' - 11"		1,663
402	4	336	3' - 4"	100	2' - 0"		748
501	5	28	18' - 4"	104	15' - 11"	2'-5"	535
502	5	28	17' - 7"	104	15' - 2"	2'-5"	513
503	5	28	16' - 9"	104	14' - 4"	2'-5"	489
504	5	25	16' - 0"	104	13' - 7"	2'-5"	417
505	5	28	15' - 2"	104	12' - 9"	2'-5"	443
506	5	28	14' - 5"	104	12' - 0"	2'-5"	421
507	5	28	15' - 3"	Str.			445
508	5	28	14' - 6"	Str.			423
509	5	28	13' - 9"	Str.			402
510	5	25	13' - 0"	Str.			339
511	5	28	12' - 3"	Str.			358
512	5	28	11' - 6"	Str.			336
513	5	6	7' - 11"	104	5' - 6"	2'-5"	50
514	5	6	8' - 11"	120	4' - 11"	1'-11"	56
601	6	40	13' - 8"	104	11' - 2"	2'-6"	821
602	6	14	7' - 0"	Str.			147
603	6	40	6' - 0"	Str.			360
604	6	4	11' - 0"	Str.			66
901	9	45	31' - 9"	Str.			4,858
902	9	3	28' - 6"	Str.			291
903	9	39	29' - 9"	Str.			3,945
904	9	1	24' - 9"	Str.			84
905	9	8	11' - 0"	Str.			299
906	9	16	5' - 9"	Str.			313
907	9	8	8' - 6"	Str.			231
1101	11	34	12' - 0"	Str.			2,168
1102	11	20	19' - 0"	121			2,019
1103	11	53	32' - 6"	Str.			9,152
1104	11	3	28' - 9"	Str.			458
1105	11	47	32' - 3"	Str.			8,053
1106	11	1	27' - 3"	Str.			145



BENDING DIAGRAM

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

REINFORCEMENT SCHEDULE

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE N/o Scale
MADE E.R.K. DATE 3-9-54
TRCD. E.I.S. DATE 6-1-54
CKD. J.G.S. DATE 6-23-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 1.31

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

32
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

WEST END PIER FOOTING WN

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
601	6	29	23'-6"	Str.			1024
602	6	25	27'-6"	Str.			1033
801	8	68	5'-6"	Str.			999
802	8	50	5'-0"	101			668

WEST END PIER SHAFT

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	280	4'-3"	100	2'-11"		795
402	4	240	3'-2"	100	1'-11"		508
403	4	80	4'-9"	100	3'-5"		254
404	4	80	3'-7"	100	2'-3"		192
405	4	4	5'-3"	Str.			14
501	5	40	19'-6"	Str.			818
502	5	40	12'-9"	103	1'-5"		532
503	5	40	15'-7"	105	1'-5"&2'-1"	12'-1"	650
504	5	4	12'-8"	104	11'-7"	1'-1"	53
505	5	4	15'-0"	105	1'-1"&2'-1"	11'-10"	63
506	5	2	15'-0"	Str.			31
507	5	2	17'-0"	Str.			35
508	5	8	16'-6"	Str.			138
509	5	8	15'-9"	Str.			131
510	5	4	15'-6"	Str.			65
511	5	8	18'-6"	Str.			154
512	5	8	17'-9"	Str.			148
513	5	4	17'-6"	Str.			73
514	5	16	15'-0"	Str.			250
515	5	16	14'-3"	Str.			238
516	5	8	14'-0"	Str.			1168
601	6	50	4'-6"	Str.			338
602	6	11	17'-6"	105	1'-3"	15'-0"	289
603	6	9	19'-6"	105	1'-3"	17'-0"	264
604	6	2	14'-6"	105	1'-3"	12'-0"	44
605	6	13	25'-0"	105	1'-3"	22'-6"	488
606	6	2	9'-9"	104	8'-6"	1'-3"	29
607	6	2	11'-9"	104	10'-6"	1'-3"	35
608	6	1	10'-1"	104	8'-10"	1'-3"	15
609	6	1	12'-1"	104	10'-10"	1'-3"	18
610	6	4	4'-6"	104	3'-3"	1'-3"	27
611	6	2	12'-6"	104	11'-3"	1'-3"	38
612	6	2	11'-8"	104	10'-5"	1'-3"	35
613	6	8	7'-6"	Str.			90
614	6	6	9'-6"	Str.			86
615	6	6	12'-0"	120	1'-3"		108
616	6	24	6'-3"	Str.			225
801	8	186	17'-3"	Str.			8567
802	8	50	13'-3"	Str.			1769
803	8	9	21'-3"	Str.			511
804	8	2	8'-0"	Str.			43
805	8	2	10'-9"	Str.			57
806	8	1	7'-9"	Str.			21
807	8	1	10'-6"	Str.			28
808	8	73	5'-0"	Str.			975
1101	11	23	15'-6"	Str.			1894
1102	11	2	10'-0"	Str.			106
1103	11	2	3'-6"	Str.			37
1104	11	1	9'-6"	Str.			50
1105	11	1	3'-0"	Str.			16

WEST END PIER FOOTING WS

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
601	6	29	23'-6"	Str.			1024
602	6	25	27'-6"	Str.			1033
801	8	68	5'-6"	Str.			999
802	8	50	5'-0"	101			668

WEST END PIER SHAFT

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	126	14'-3"	100	2'-11"		358
402	4	108	3'-3"	100	1'-11"		234
403	4	36	4'-9"	100	3'-5"		114
404	4	36	3'-7"	100	2'-3"		86
405	4	4	5'-3"	Str.			14
501	5	18	19'-6"	Str.			366
502	5	18	12'-9"	103	1'-5"		239
503	5	18	15'-7"	105	1'-5"&2'-1"	12'-1"	293
504	5	4	12'-8"	104	11'-7"	1'-1"	53
505	5	4	15'-0"	105	1'-1"&2'-1"	11'-10"	63
506	5	2	15'-0"	Str.			31
507	5	2	17'-0"	Str.			35
508	5	9	15'-6"	Str.			145
509	5	18	14'-3"	Str.			268
510	5	9	17'-6"	Str.			164
601	6	50	4'-6"	Str.			338
602	6	11	17'-6"	105	1'-3"	15'-0"	289
603	6	9	19'-6"	105	1'-3"	17'-0"	264
604	6	2	14'-6"	105	1'-3"	12'-0"	44
605	6	13	25'-0"	105	1'-3"	22'-6"	488
606	6	2	9'-9"	104	8'-6"	1'-3"	29
607	6	2	11'-9"	104	10'-6"	1'-3"	35
608	6	1	10'-1"	104	8'-10"	1'-3"	15
609	6	1	12'-1"	104	10'-10"	1'-3"	18
610	6	4	4'-6"	104	3'-3"	1'-3"	27
611	6	2	12'-6"	104	11'-3"	1'-3"	38
612	6	2	11'-8"	104	10'-5"	1'-3"	35
613	6	8	7'-6"	Str.			90
614	6	6	9'-6"	Str.			86
615	6	6	12'-0"	120	1'-3"		108
616	6	24	6'-3"	Str.			225
801	8	68	17'-0"	Str.			3087
802	8	50	13'-3"	Str.			1769
803	8	9	21'-3"	Str.			511
804	8	2	8'-0"	Str.			43
805	8	2	10'-9"	Str.			57
806	8	1	7'-9"	Str.			21
807	8	1	10'-6"	Str.			28
808	8	73	5'-0"	Str.			975
1101	11	23	15'-6"	Str.			1894
1102	11	2	10'-0"	Str.			106
1103	11	2	3'-6"	Str.			37
1104	11	1	9'-6"	Str.			50
1105	11	1	3'-0"	Str.			16

EAST END PIER FOOTING EN

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
601	6	29	23'-6"	Str.			1024
602	6	25	27'-6"	Str.			1033
801	8	68	5'-6"	Str.			999
802	8	50	5'-0"	101			668

EAST END PIER SHAFT

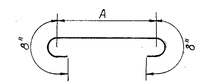
MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	378	4'-3"	100	2'-11"		1073
402	4	324	3'-3"	100	1'-11"		703
403	4	108	4'-9"	100	3'-5"		343
404	4	108	3'-7"	100	2'-3"		259
405	4	4	5'-3"	Str.			14
501	5	54	20'-3"	Str.			1141
502	5	54	13'-6"	103	2'-2"		760
503	5	54	16'-8"	105	2'-2"&2'-5"	12'-11"	939
504	5	4	13'-6"	104	11'-9"	1'-9"	56
505	5	4	16'-0"	105	1'-9"&2'-5"	11'-10"	67
506	5	2	15'-0"	Str.			31
507	5	2	17'-0"	Str.			35
508	5	7	17'-3"	Str.			126
509	5	7	16'-6"	Str.			120
510	5	7	16'-0"	Str.			117
511	5	6	15'-6"	Str.			97
512	5	7	19'-3"	Str.			141
513	5	7	18'-6"	Str.			135
514	5	7	18'-0"	Str.			131
515	5	6	17'-6"	Str.			110
516	5	14	18'-3"	Str.			266
517	5	14	17'-9"	Str.			259
518	5	14	17'-3"	Str.			256
519	5	12	16'-6"	Str.			207
601	6	48	6'-0"	Str.			433
602	6	11	19'-0"	105	2'-0"	15'-0"	314
603	6	9	21'-0"	105	2'-0"	17'-0"	284
604	6	2	16'-0"	105	2'-0"	12'-0"	48
605	6	13	26'-6"	105	2'-0"	22'-6"	517
606	6	2	12'-5"	105	2'-0"	845"	38
607	6	2	14'-5"	105	2'-0"	10'-5"	44
608	6	1	12'-8"	105	2'-0"	848"	19
609	6	1	14'-8"	105	2'-0"	10'-8"	22
610	6	4	7'-5"	105	2'-0"	345"	45
611	6	2	15'-3"	105	2'-0"	11'-3"	46
612	6	2	14'-5"	105	2'-0"	10'-5"	44
613	6	8	7'-6"	Str.			90
614	6	6	8'-6"	Str.			77
615	6	6	12'-9"	120	2'-0"		115
616	6	24	6'-3"	Str.			225
617	6	2	6'-0"	108			18
801	8	118	20'-0"	Str.			6301
802	8	68	24'-9"	Str.			4494
803	8	9	22'-6"	Str.			541
804	8	2	8'-9"	Str.			47
805	8	2	10'-9"	Str.			57
806	8	1	8'-6"	Str.			23
807	8	1	10'-6"	Str.			28
808	8	69	5'-0"	Str.			921
1101	11	23	15'-3"	Str.			1864
1102	11	2	10'-0"	Str.			106
1103	11	2	3'-9"	Str.			40
1104	11	1	9'-6"	Str.			50
1105	11	1	3'-6"	Str.			19

EAST END PIER FOOTING ES

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
601	6	33	23'-6"	Str.			1165
801	8	68	5'-6"	Str.			999
802	8	50	5'-0"	101			668
1001	10	36	31'-6"	Str.			4880

EAST END PIER SHAFT

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
401	4	378	4'-3"	100	2'-11"		1073
402	4	324	3'-3"	100	1'-11"		703
403	4	108	4'-9"	100	3'-5"		343
404	4	108	3'-7"	100	2'-3"		259
405	4	4	5'-3"	Str.			14
501	5	54	20'-3"	Str.			1141
502	5	54	13'-6"	103	2'-2"		760
503	5	54	16'-8"	105	2'-2"&2'-5"	12'-11"	939
504	5	4	13'-6"	104	11'-9"	1'-9"	56
505	5	4	16'-0"	105	1'-9"&2'-5"	11'-10"	67
506	5	2	15'-0"	Str.			31
507	5	2	17'-0"	Str.			35
508	5	7	17'-3"	Str.			126
509	5	7	16'-6"	Str.			120
510	5	7	16'-0"	Str.			117
511	5	6	15'-6"	Str.			97
512	5	7	19'-3"	Str.			141
513	5	7	18'-6"	Str.			135
514	5	7	18'-0"	Str.			131
515	5	6	17'-6"	Str.			110
516	5	14	18'-3"	Str.			266
517	5	14	17'-9"	Str.			259
518	5	14	17'-3"	Str.			256
519	5	12	16'-6"	Str.			207
601	6	48	6'-0"	Str.			433
602	6	11	19'-0"	105	2'-0"	15'-0"	314
603	6	9	21'-0"	105	2'-0"	17'-0"	284
604	6	2	16'-0"	105	2'-0"	12'-0"	48
605	6	13	26'-6"	105	2'-0"	22'-6"	517
606	6	2	12'-5"	105	2'-0"	845"	38
607	6	2	14'-5"	105	2'-0"	10'-5"	44
608	6	1	12'-8"	105	2'-0"	848"	19
609	6	1	14'-8"	105	2'-0"	10'-8"	22
610	6	4	7'-5"	105	2'-0"	345"	45
611	6	2	15'-3"	105	2'-0"	11'-3"	46
612	6	2	14'-5"	105	2'-0"	10'-5"	44
613	6	8	7'-6"	Str.			90
614	6	6	8'-6"	Str.			77
615	6	6	12'-9"	120	2'-0"		115
616	6	24	6'-3"	Str.			225
617	6	2	6'-0"	108			18
801	8	118	20'-0"	Str.			6301
802	8	68	24'-9"	Str.			4494
803	8	9	22'-6"	Str.			541
804	8	2	8'-9"	Str.			47
805	8	2	10'-9"	Str.			57
806	8	1	8'-6"	Str.			23
807	8	1	10'-6"	Str.			28
808	8	69	5'-0"	Str.			921
1101	11	23	15'-3"	Str.			1864
1102	11	2	10'-0"	Str.			106
1103	11	2	3'-9"	Str.			40
1104	11	1	9'-6"	Str.			50
1105	11	1	3'-6"	Str.			19



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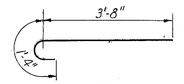

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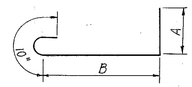

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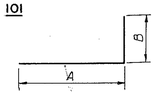

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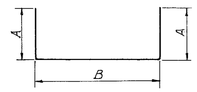

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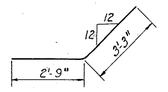

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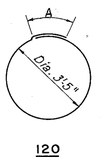


120

BENDING DIAGRAM

PART 2

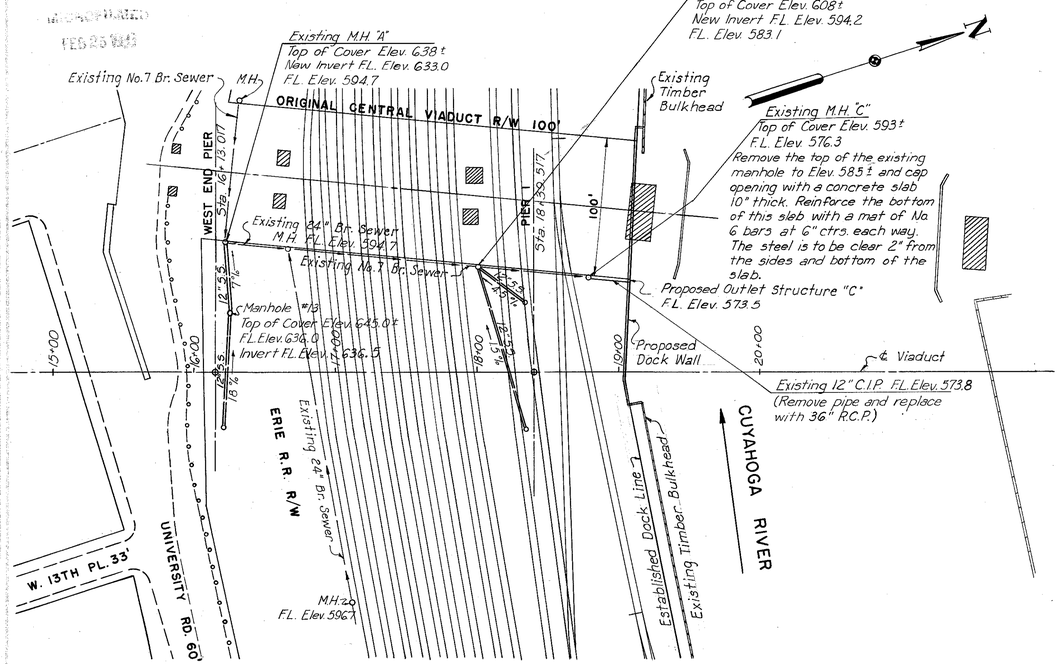
U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

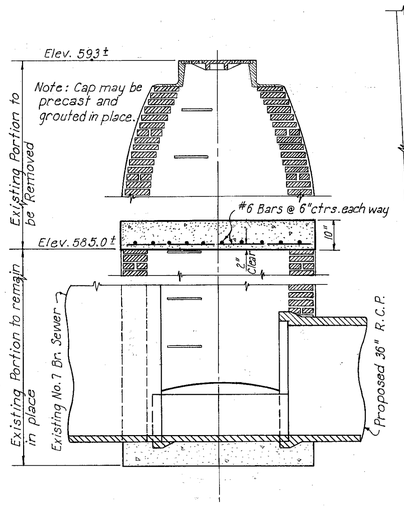
REINFORCEMENT SCHEDULE

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE No Scale
MADE RGB DATE 6-8-54
TRCD JCA DATE 8-24-54
CKD JGS DATE 8-24-54

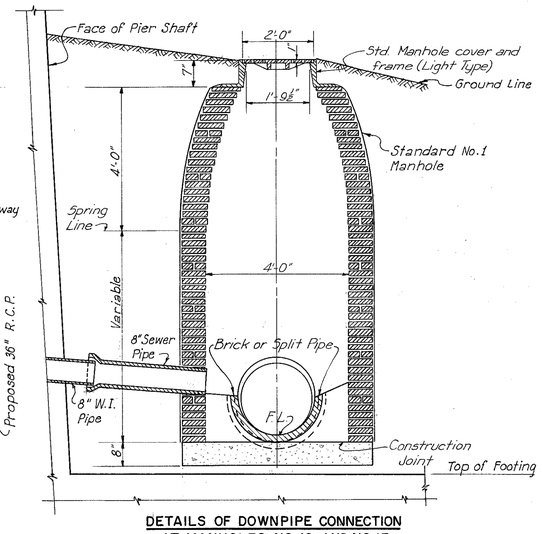
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.32





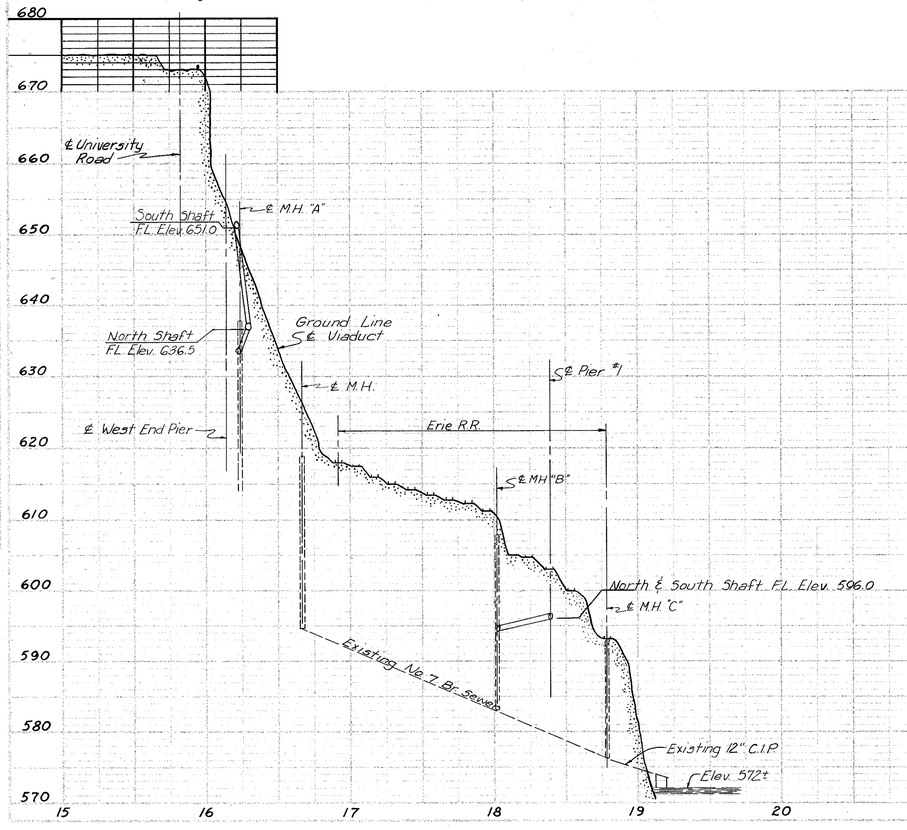
DETAILS OF ALTERATIONS TO EXISTING MANHOLE "C"

No scale



DETAILS OF DOWNPIPE CONNECTION AT MANHOLES NO. 12 AND NO. 13

No scale



FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

33
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

STORM SEWER DATA

Location	Size	Class	Length
W.S. End Pier to M.H. #13	12	A	77
M.H. #13 to M.H. "A"	12	A	50
Pier 1S to M.H. "B"	12	A	115
Pier 1N to M.H. "B"	12	A	39
Manhole "C" to Dock Line	36	C	30
Outlet, Structure "A" to M.H. #1	27	D	80
Pier 2N to M.H. #1	12	A	39
Pier 2S to M.H. #1	12	A	29
M.H. #1 to M.H. #2	24	C	250
Pier 3N to M.H. #2	12	A	39
Pier 3S to M.H. #2	15	C	29
M.H. #2 to M.H. #3	24	A	370
Pier 4N to M.H. #3	12	A	30
Pier 4S to M.H. #3	12	A	71
M.H. #3 to M.H. #4	15	A / C	160 / 120
Pier 5N to M.H. #4	12	A	34
Pier 5S to M.H. #4	15	C	34
Outlet, Structure "B" to M.H. #11	24	D	(60) — 90
M.H. #11 to M.H. #16	24	B	(116) — 84
M.H. #16 to M.H. #10	24	A	240
M.H. #10 to M.H. #9	24	A / C	322 / 46
M.H. #9 to M.H. #8	12	B	140
M.H. #8 to M.H. #12	12	A	55
M.H. #12 to Pier 6N	12	A	78
M.H. #9 to M.H. #5	21	A	142
M.H. #5 to Pier 7N	12	A	62
M.H. #5 to Pier 7S	12	A	40
M.H. #5 to M.H. #6	15	A / C	175 / 105
M.H. #6 to Pier 8N	12	A	109
M.H. #6 to Pier 8S	12	A	109
M.H. "D" to M.H. #7	12	A	240
M.H. #7 to E.N. End Pier	12	A	92
M.H. #7 to E.S. End Pier	12	A	25
M.H. #14 to M.H. #15	12	B	54
M.H. #15 to M.H. "F"	12	B	57
Replacement at Pier 7N	18	B	80
W.N. End Pier to M.H. #13	8	A	3
Pier 6S to M.H. #12	8	A	3

Class "C" Extra-Strength Reinforced Concrete Culvert Pipe, Sec. M-6.6(c) for Storm Sewers.
Class "D" Paved Bituminous Coated Corrugated Metal Pipe, Sec. M-6.4(d) for Storm Sewers. 12 Gage for both 24" and 27" diameter.
Class "A" Pipe for Storm Sewers.
Class "B" Pipe for Storm Sewers under Pavement.

PENCIL REVISIONS
SEPT. 20, 1955

PART 2

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

STORM SEWER LAYOUT

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=50' & 1"=10'
MADE S.W.F. DATE 2-9-54
TRCD M.A.H. DATE 5-25-54
CKD C.J.C. DATE 6-24-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914 1A SHEET 1.33

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

34
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

PART 2

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

STORM SEWER LAYOUT

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50'
MADE S.W.F. DATE 2-10-54
TRCD N.A.M. DATE 5-20-54
CKD C.J.C. DATE 6-11-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET-1.34

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

35
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50

FORCE ACCOUNT WORK
by The Baltimore and Ohio Railroad Co.

A. Preliminary Engineering	Lump Sum
B. Construction Engineering	Lump Sum
C. Temporary Supporting	Lump Sum

NOTE:
The labor and the furnishing of materials in connection with the temporary and permanent track work as shown on this sheet and as called for in the estimate will be performed by the Baltimore and Ohio Railroad Company by force account.

PENCIL REVISIONS
SEPT. 20, 1955

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

STORM SEWER LAYOUT

CLEVELAND CUYAHOGA COUNTY OHIO

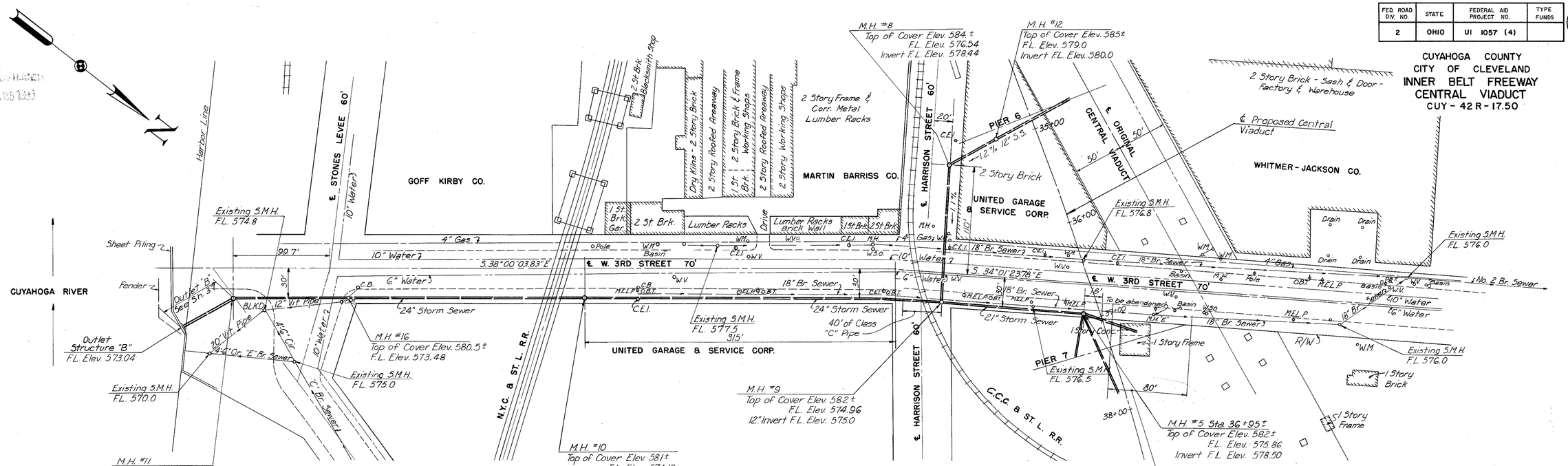
SCALE 1"= 50'
MADE SWF DATE 2-11-54
TRCD AAH DATE 5-22-54
CKD JGS DATE 6-26-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.35

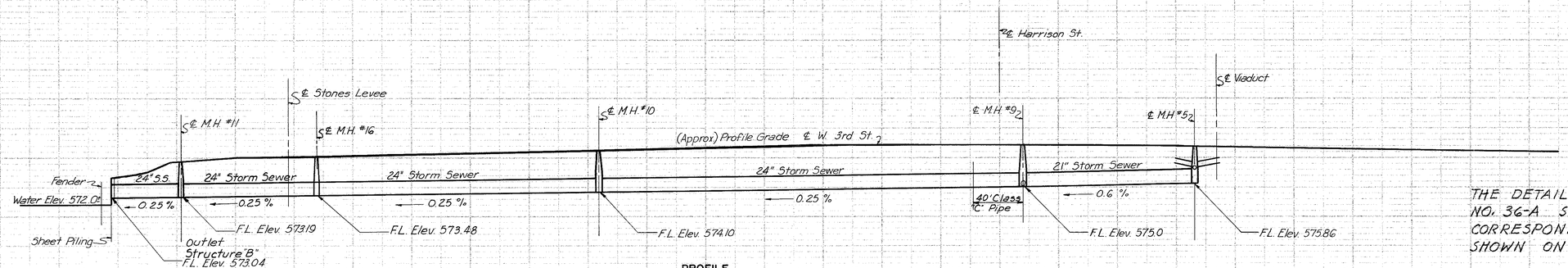
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

36
43

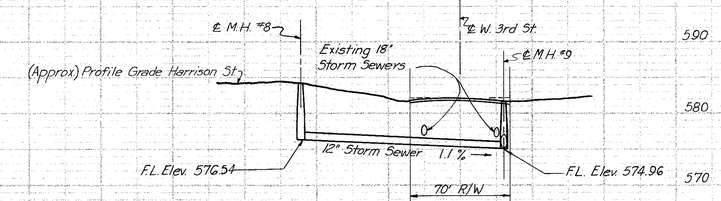
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



PLAN



PROFILE



PROFILE ON HARRISON ST.

THE DETAILS SHOWN ON SHEET NO. 36-A SUPERSEDE THE CORRESPONDING DETAILS SHOWN ON THIS SHEET (NO. 36)
SEPT. 20, 1955

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

STORM SEWER LAYOUT

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50'
MADE SWF DATE 2-10-54
TRCD N.A.M. DATE 3-18-54
CKD C.J.C. DATE 6-12-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

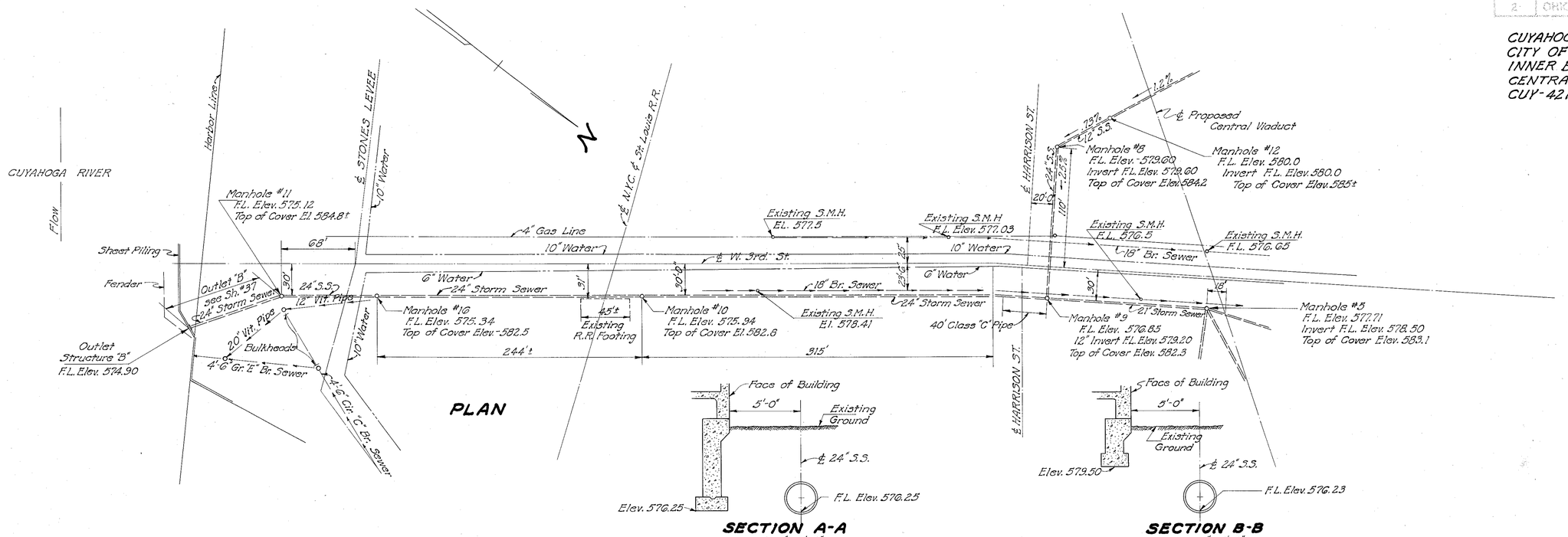
914-1A SHEET- 1.36

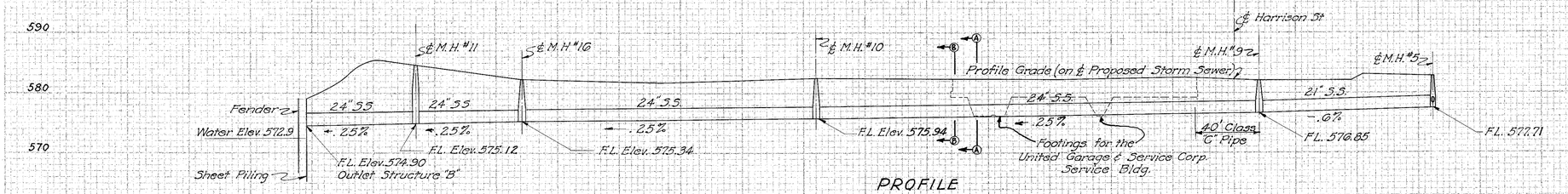
133

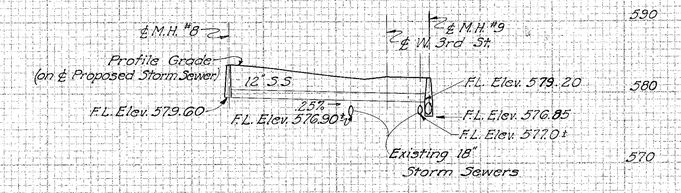
FED. AID PROJECT	STATE	PROJECT	
2	OHIO	UI 1057 (4)	

36-A
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42 R-17.50







Note: For original storm sewer layout see Sheet L30

The details shown on this sheet (No. 30-A) supersede the corresponding details on Sheet NO. 30

This tracing prepared in the Bureau of Bridges from pencil drawing furnished by Howard, Needles, Tammen & Bergendoff, Consulting Engineers.

PART 2.

U.S. ROUTE 42 RELOCATION
INNER BELT FREEWAY-CENTRAL VIADUCT
REVISED STORM SEWER LAYOUT
CLEVELAND CUYAHOGA COUNTY OHIO

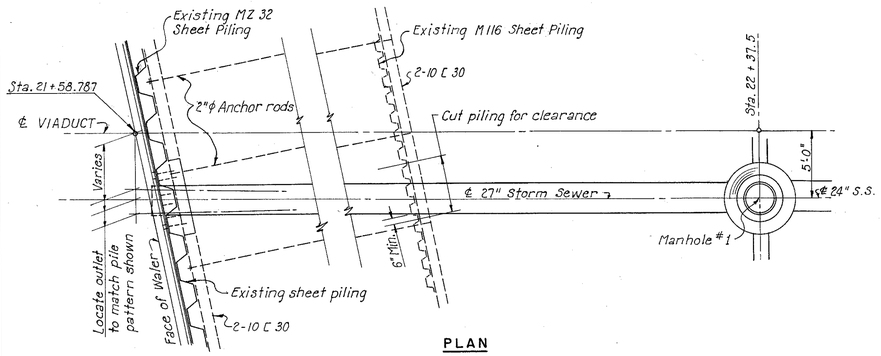
Scale: 1"=50'
MADE: SLC DATE: 9-20-55
TRCD. JDJ DATE: 10-19-55
CK'D: JCT DATE: 9-20-55

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A
SHEET L 36-A

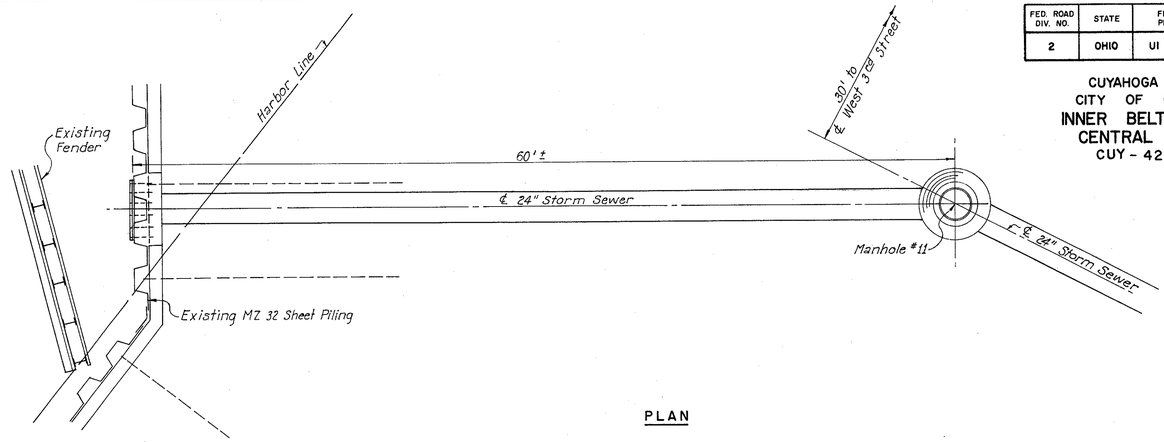
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

37
43

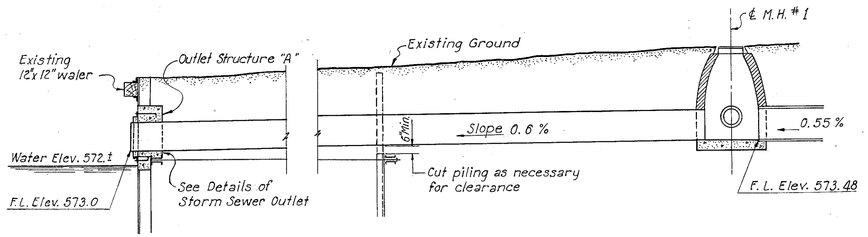
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42R - 17.50



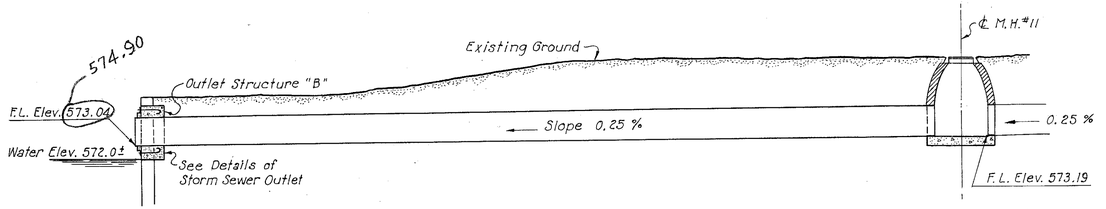
PLAN



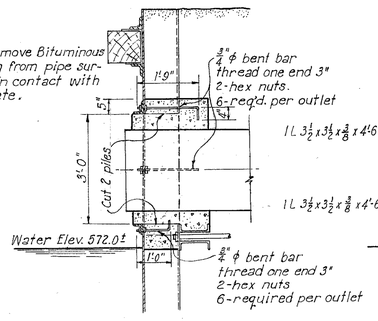
PLAN



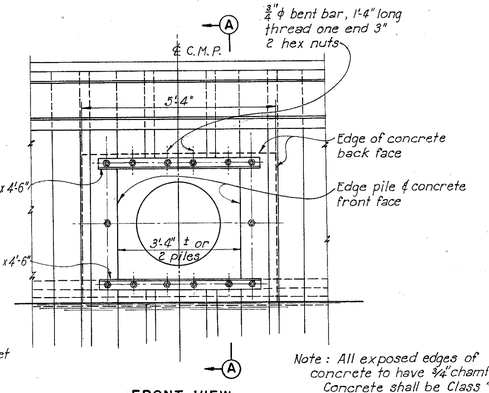
ELEVATION
STORM SEWER OUTLET "A"
Scale : $\frac{3}{16}$" = 1'-0"



ELEVATION
STORM SEWER OUTLET "B"
Scale : $\frac{3}{16}$" = 1'-0"



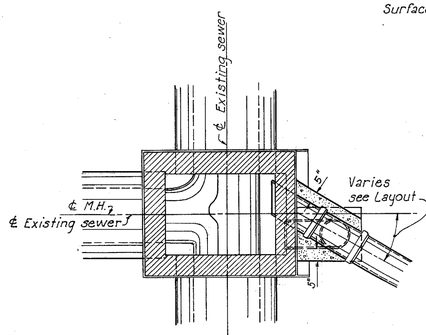
SECTION A-A



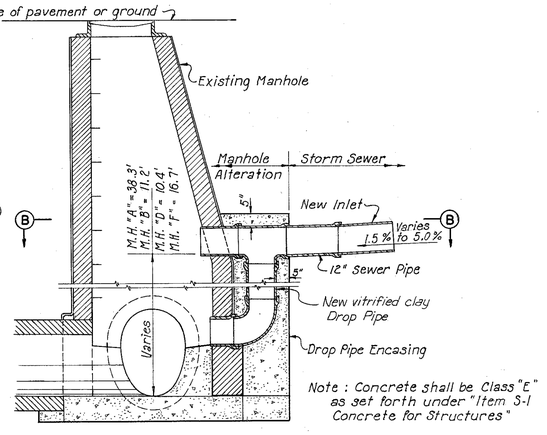
FRONT VIEW

Note : All exposed edges of concrete to have ¾" chamfer. Concrete shall be Class "E" as set forth under "Item S-1, Concrete for Structures.

DETAILS OF
STORM SEWER OUTLETS "A" AND "B"
Scale : $\frac{1}{2}$" = 1'-0"



SECTION B-B



Note : Concrete shall be Class "E" as set forth under "Item S-1 Concrete for Structures"

SECTIONAL ELEVATION

MANHOLE ALTERATIONS
Manhole "D" shown
A", "B" ℄ "F" similar
Scale : $\frac{3}{8}$" = 1'-0"

PENCIL REVISIONS
SEPT. 20, 1955

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

STORM SEWER DETAILS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE S W F DATE 3-19-54
TRCD. A H DATE 6-24-54
CKD. G/C DATE 6-25 54

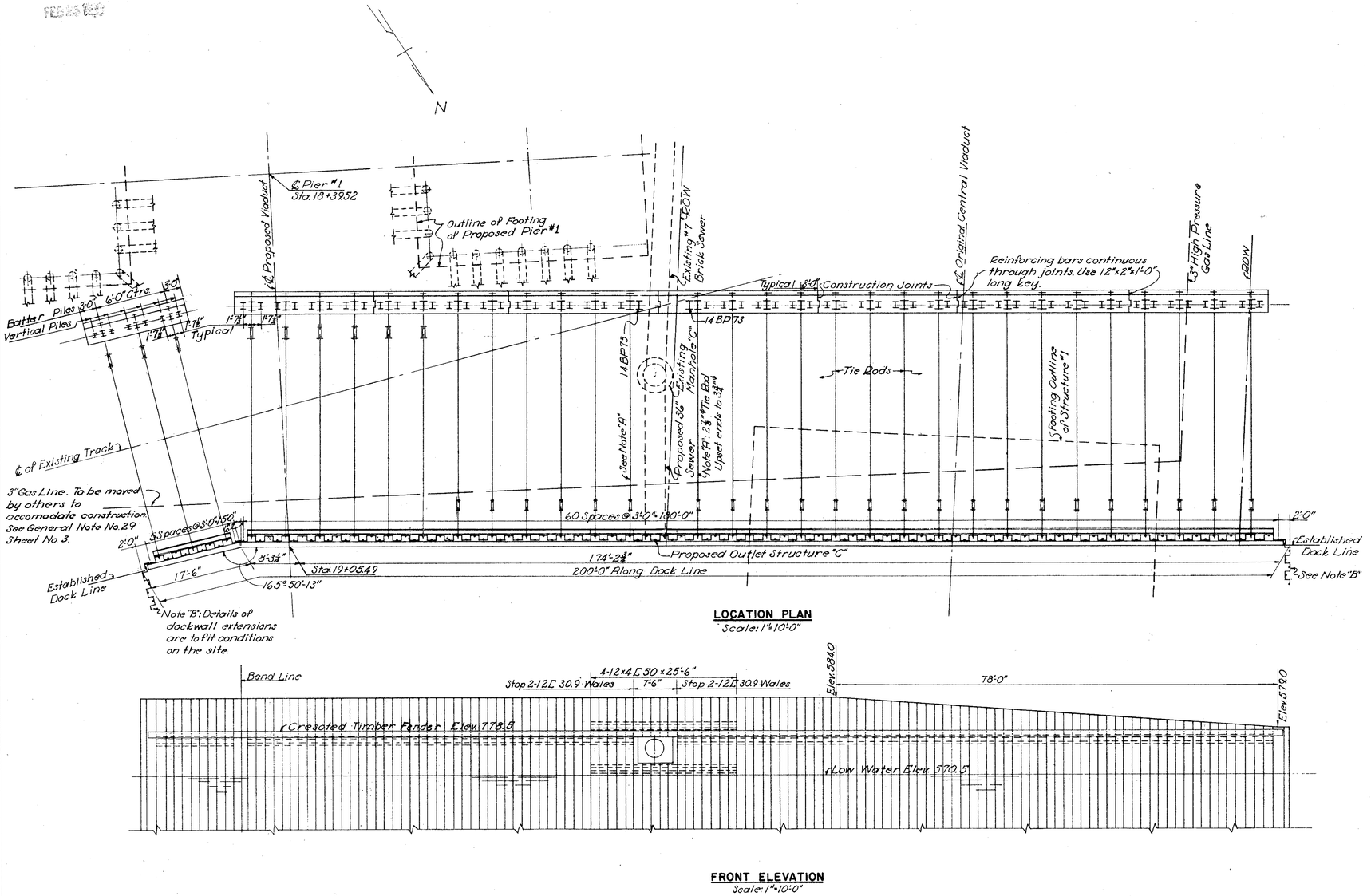
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.37

134

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

38
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50

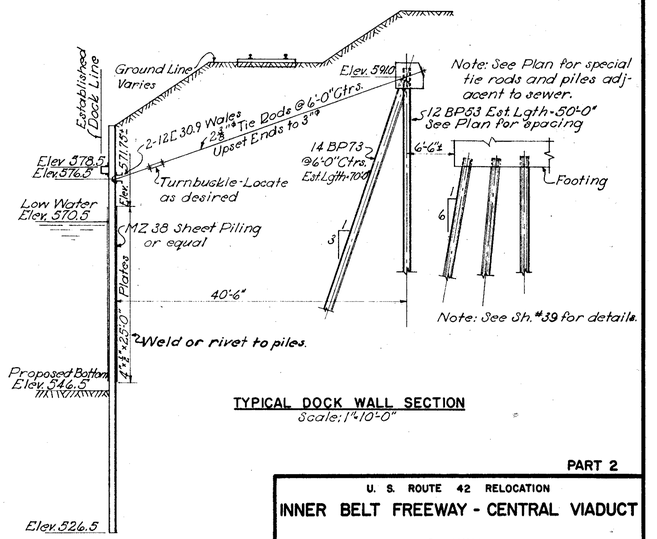


LOCATION PLAN
Scale: 1"=10'-0"

FRONT ELEVATION
Scale: 1"=10'-0"

GENERAL NOTES

All splice plates to be fillet welded in shop to structural members.
All bolted connections, including anchor rods, shall have the threads jammed to form a definite lock.
The concrete anchor pile cap must be constructed in sections. Bar splices for the six construction joints shown are included in the estimated quantities. Locations may be shifted to any typical position.



TYPICAL DOCK WALL SECTION
Scale: 1"=10'-0"

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
DOCKWALL
LOCATION PLAN AND TYPICAL SECTION
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=10'-0"
MADE CJC DATE 3-31-54
TRCD. CJC DATE 9-1-54
CKD. JK DATE 8-31-54

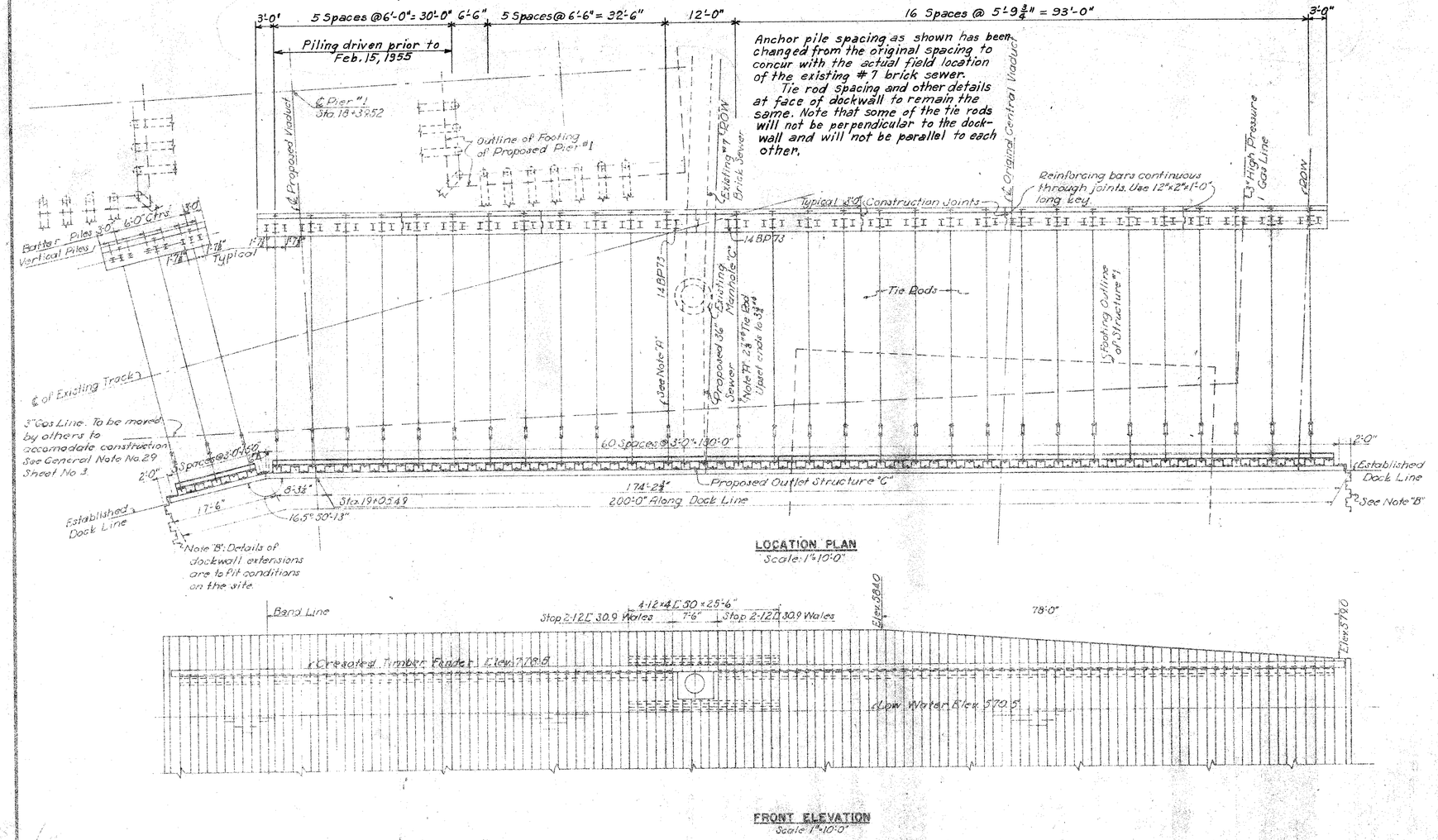
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 1.38

Superseded by Sheet 38A
2-15-55

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	CITY FUNDS
2	OHIO	UI 1087 (4)	

38A
43

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50

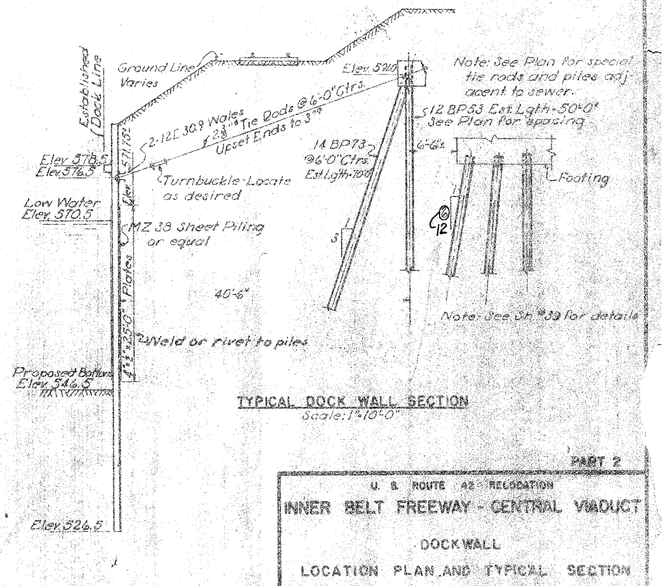


LOCATION PLAN
Scale: 1"=10'-0"

FRONT ELEVATION
Scale 1"=10'-0"

GENERAL NOTES

All splice plates to be Fillet welded in shop to structural members. All bolted connections, including anchor rods, shall have the threads jammed to form a definite lock.
The concrete anchor pile cap must be constructed in sections. Bar splices for the six construction joints shown are included in the estimated quantities. Locations may be shifted to any typical position.



TYPICAL DOCK WALL SECTION
Scale: 1"=10'-0"

Supersedes Sheet 38
Revised anchor pile spacing - GA 2-15-55

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
DOCKWALL
LOCATION PLAN AND TYPICAL SECTION
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=10'-0"
HWY. C.J.C. DATE 8-31-56
TRSP. C.J.C. DATE 8-31-56
CHD. J.K. DATE 8-31-56

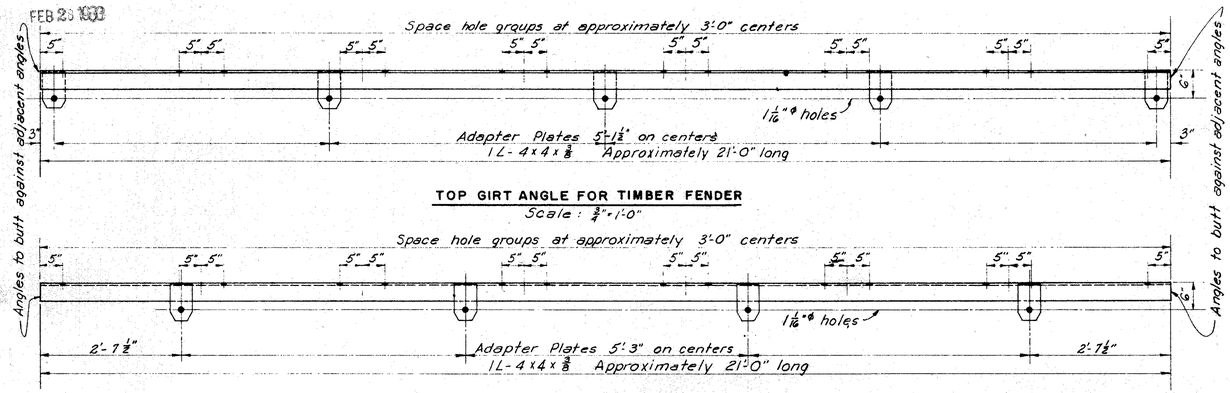
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

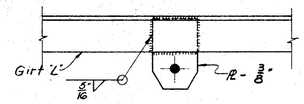
DW-18 SHEET 138

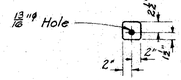
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

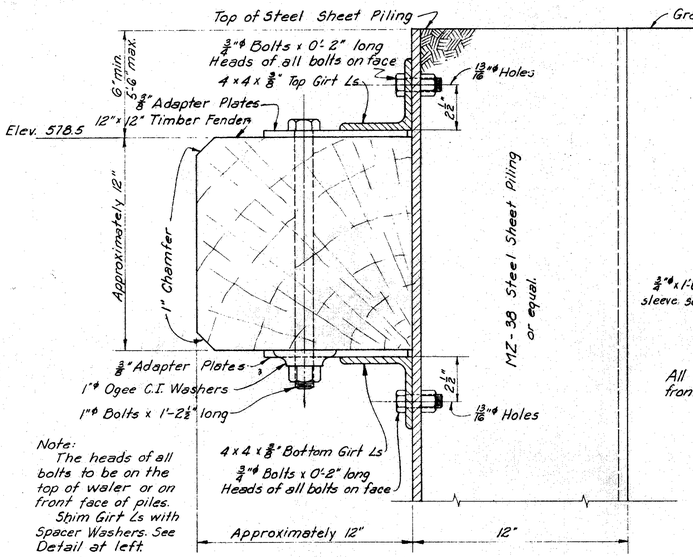
39
43

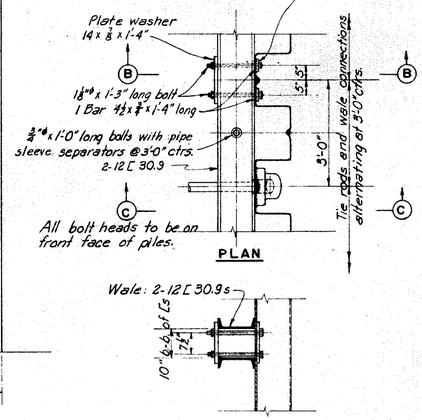
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50

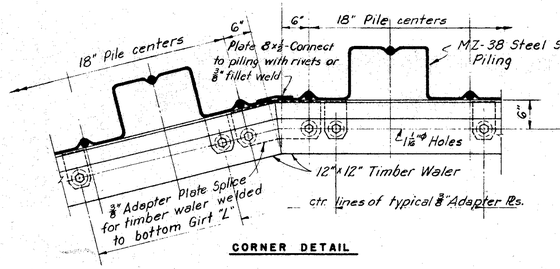


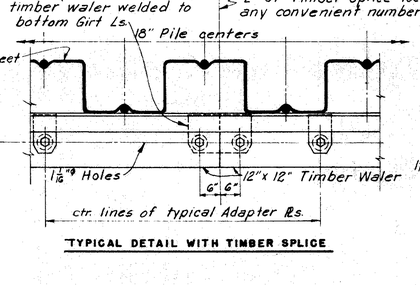


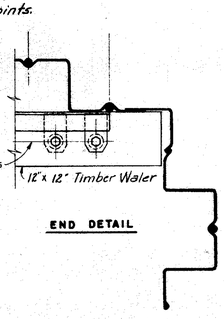


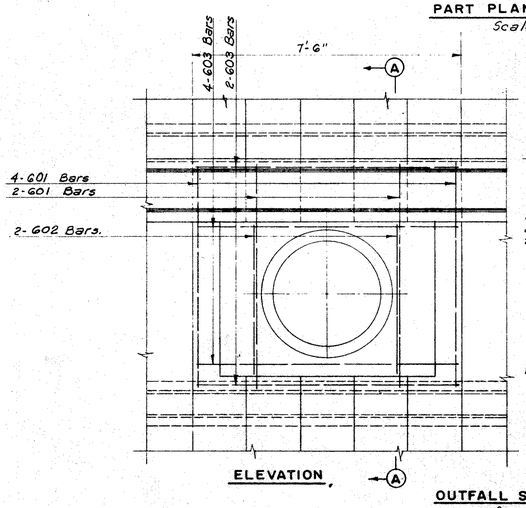


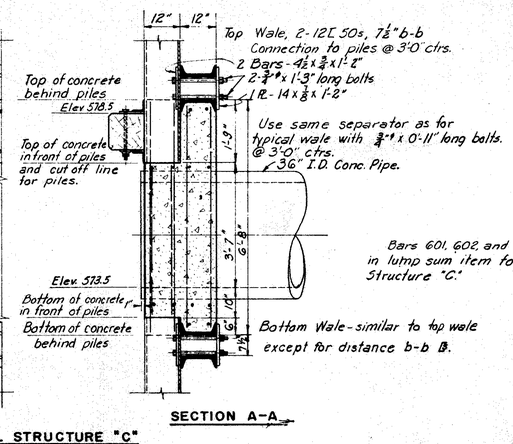






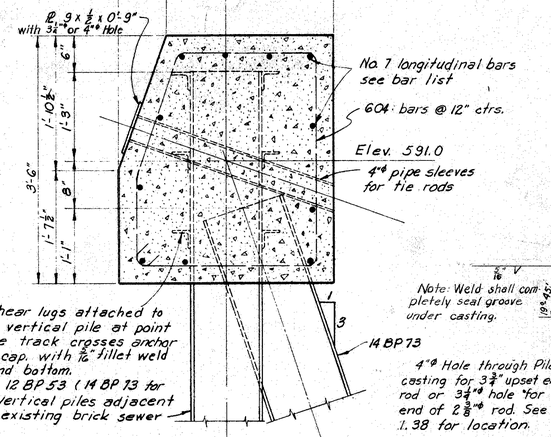


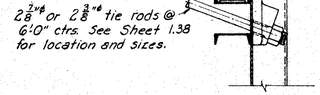




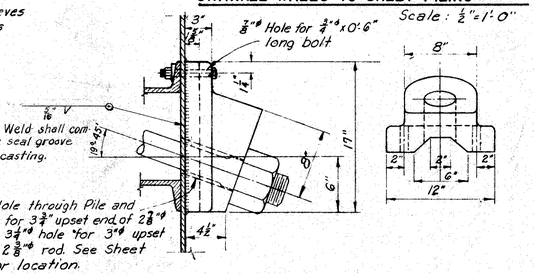
OUTFALL STRUCTURE "C"
Scale: 1/2"=1'-0"

Bars 601, 602 and 603 included in lump sum item for Outfall Structure "C."



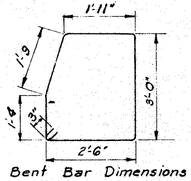


CONNECTION OF ANCHOR RODS AND CHANNEL WALES TO SHEET PILING



REINFORCEMENT SCHEDULE

Mark	Size	Type	Length	No.	Total Weight
601		Str.	6'-0"	12	108
602		Str.	4'-0"	4	24
603		Str.	7'-0"	12	126
604		Bent	11'-0"	198	3268
701		Str.	17'-6"	11	393
702		Str.	23'-6"	44	2293
703		Str.	26'-6"	22	1282
704		Str.	29'-6"	11	663



Lengths for bars 701, 702, 703, 704 subject to revision and dependent on location of construction joints in anchor pile cap.

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

DOCK WALL DETAILS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE DME DATE 4-31-54
TRCD. DATE
CKD. DATE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 139

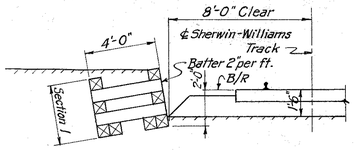
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

40
43

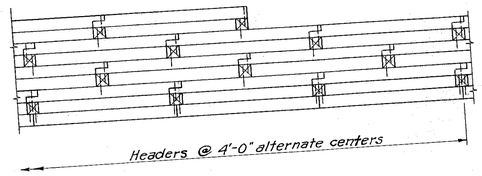
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42R - 17.50

TIMBER CRIB WALL INSTALLATION

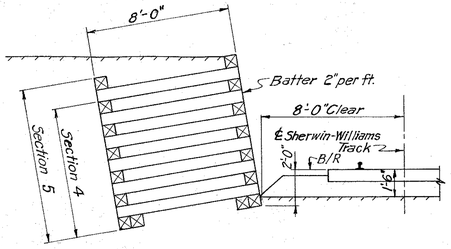
PREPARING BASE - The foundation or bed for the cribbing shall be firm and shall be approved by the Engineer before any cribbing is placed.
The foundation shall be sloped at right angles to the finished crib batter face.
FACE TIMBERS OR STRETCHERS - The timbers in the base tier and in alternate tiers above the base shall be as long as practicable. Preferably they shall have a minimum length of 8 feet. Joints in each tier shall stagger with joints in adjacent tiers.
Care shall be exercised in the erection of cribs to produce a true and even face built to line as shown on the plans. All face timbers shall be set parallel to grade.
TIES OR HEADERS - Ties shall be anchored to the face by framing, drift bolting or other approved means.
Ties should be anchored in the fill to stretchers fastened to them at right angles by drift bolts or other suitable means.
FASTENING - Each successive tier of open face cribbing shall be drift bolted together at each tie, using one ¾" drift bolt at each intersection where no splice occurs or at lap joints and two ¾" drift bolts at butt joints. Drift bolts shall be long enough to extend through one tier and at least ¾ of the distance into the next tier. Stagger drift bolts from tier to tier.
FILLING - The filling of the interior of the crib shall follow closely the erection of the successive tiers of units and at no time shall the wall be laid up higher than 3 feet above the back filled portion.
In open face cribbing a layer of hand-placed stone shall be placed in back of the front members of the cribbing to prevent loss of fill material through the openings.



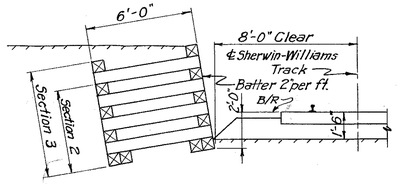
SECTION 1
Scale ¼"=1'-0"



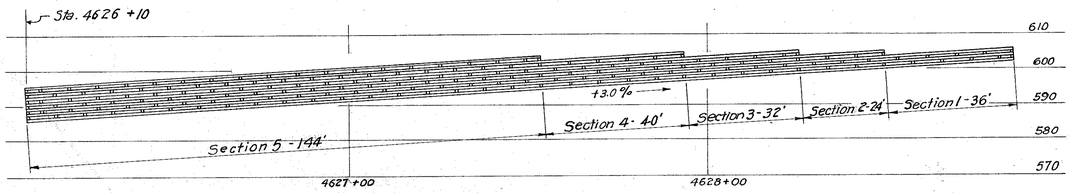
SPLICING DETAIL
Scale ¼"=1'-0"



SECTIONS 4 AND 5
Scale ¼" = 1'-0"



SECTIONS 2 AND 3
Scale ¼" = 1'-0"

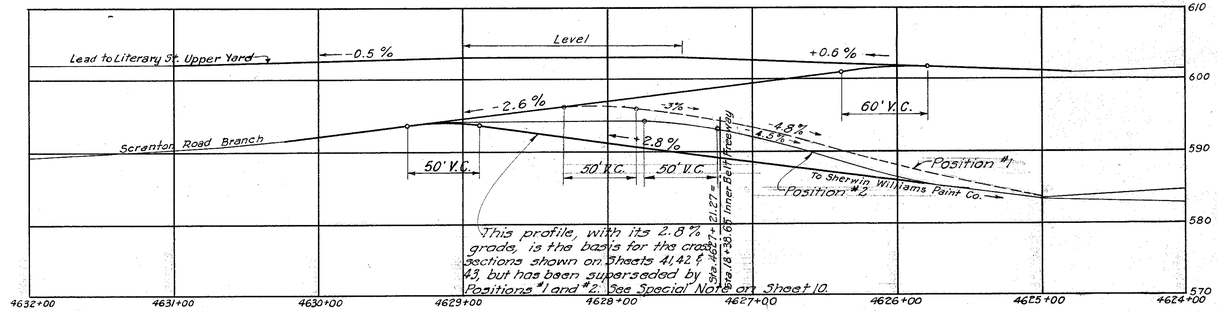


FRONT ELEVATION
Scale 1"=20'-0"

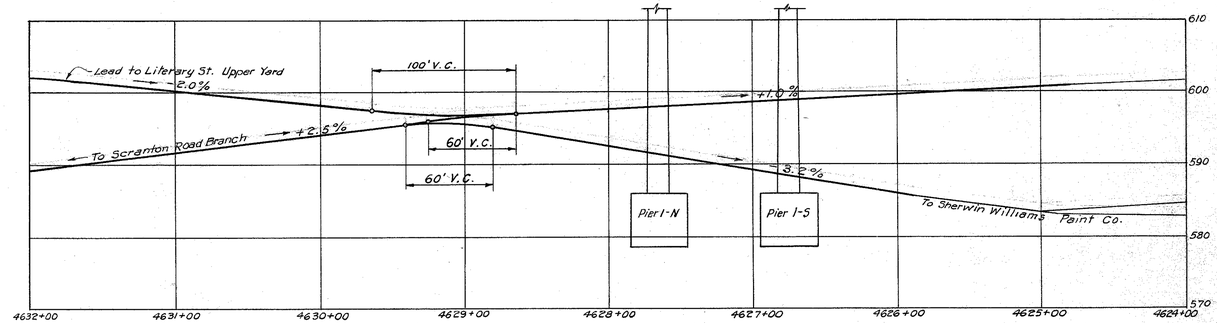
Note: All timbers are 8"x8"

TEMPORARY TIMBER CRIB WALL

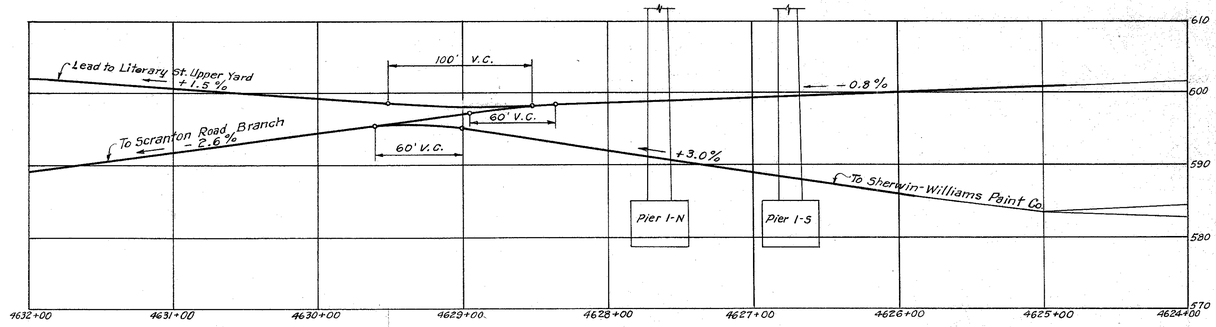
For location of crib wall in plan, see Sheet 10.



SUBGRADE PROFILES - PHASE I - CONSTRUCTING DOCKWALL



SUBGRADE PROFILES - PHASE II - CONSTRUCTION OF PIERS I-N AND I-S



SUBGRADE PROFILES - PHASE III - PERMANENT TRACK LOCATIONS

NOTE (Reference Phase I)
With tracks in position #1, construct entire dockwall and westerly 150't of anchor piles.
Install tie rods in easterly 50't of dockwall to within 10't of track in position #1.
With tracks in position #2, install easterly 50't of anchor piles and complete tie rod connections.
If necessary, support the easterly 50't of dockwall by temporary shoring.

Note:
Subgrade profiles are shown 1'-0" below base of rail elevations given on Erie Railroad Company drawings D-194, D-195 and D-196 revised Aug. 13, 1954.
For track locations in plan see Sheet 10.
For cross sections parallel to ℄ proposed Central Viaduct see Sheets 41, 42 and 43.
Subgrade Profile Scale Hor. 1"=50'-0" Vert. 1"=10'-0"

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO.
SUBGRADE PROFILES AND TEMPORARY TIMBER CRIB DETAILS
CLEVELAND CUYAHOGA COUNTY OHIO

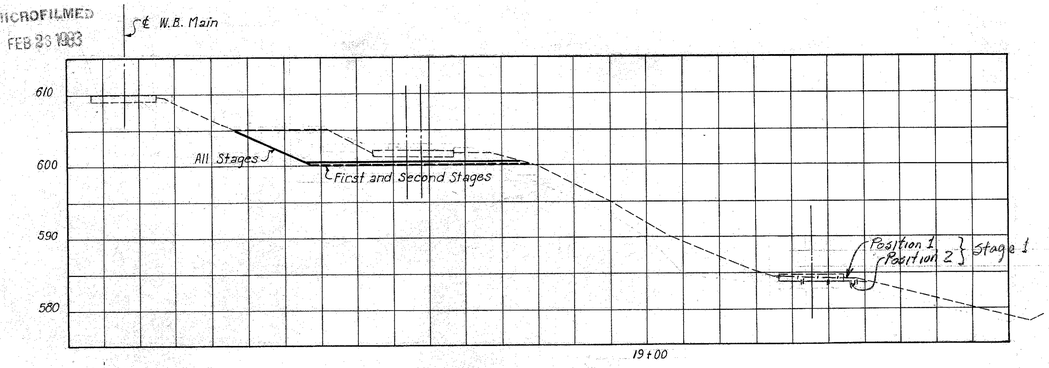
SCALE As Shown
MADE D.L.C DATE 8-30-54
TRCD. J.T.S DATE 8-30-54
CKD. J.G.S DATE 9-1-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 1.40

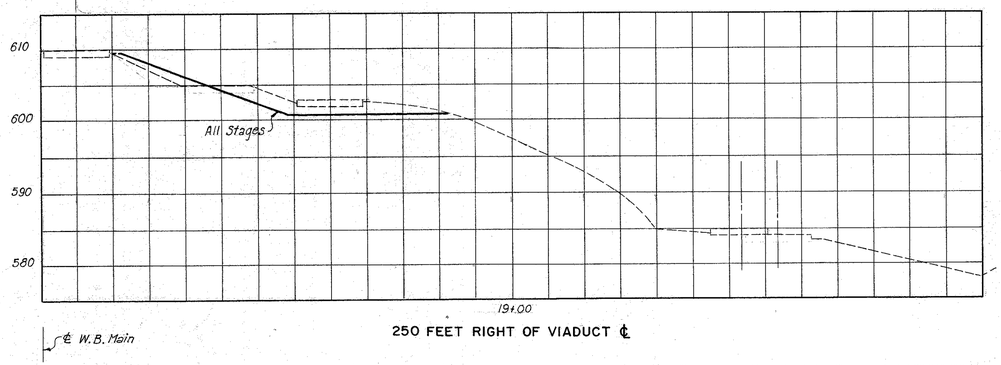
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

41
43

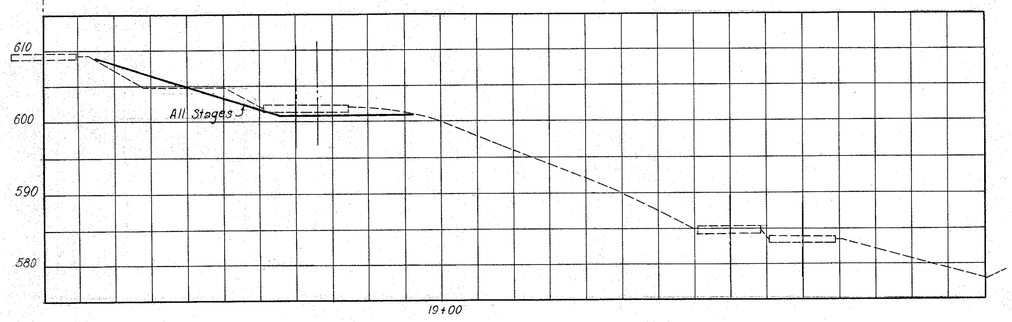
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY – 42 R – 17.50



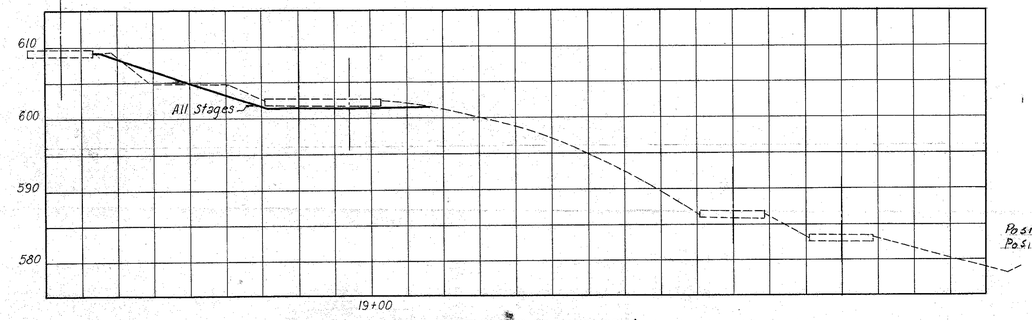
200 FEET RIGHT OF VIADUCT ℄



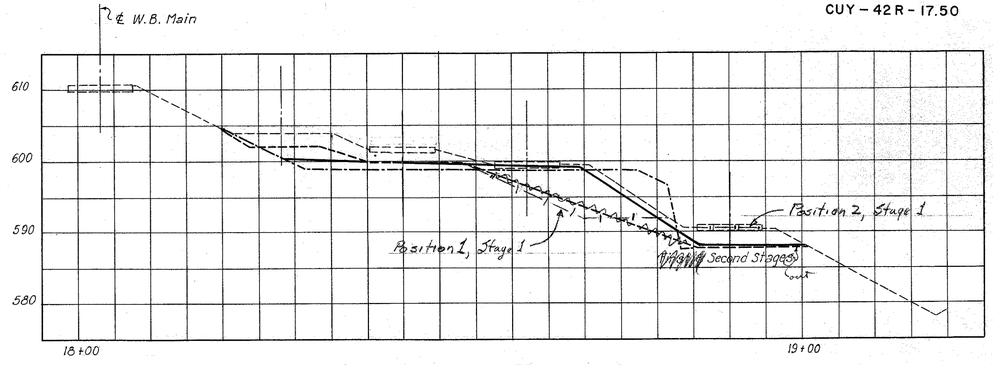
250 FEET RIGHT OF VIADUCT ℄



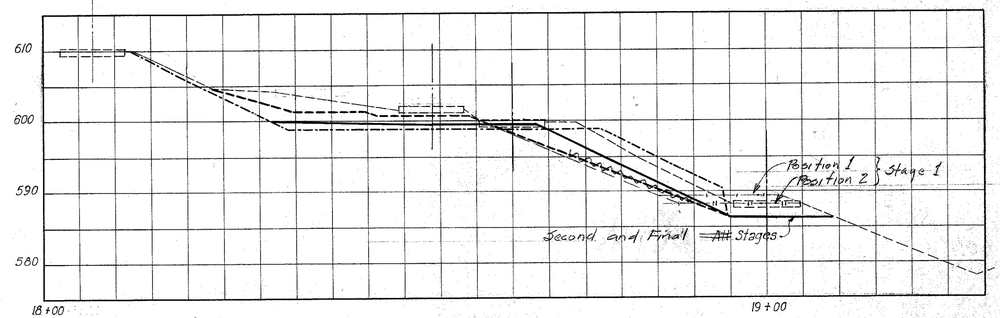
300 FEET RIGHT OF VIADUCT ℄



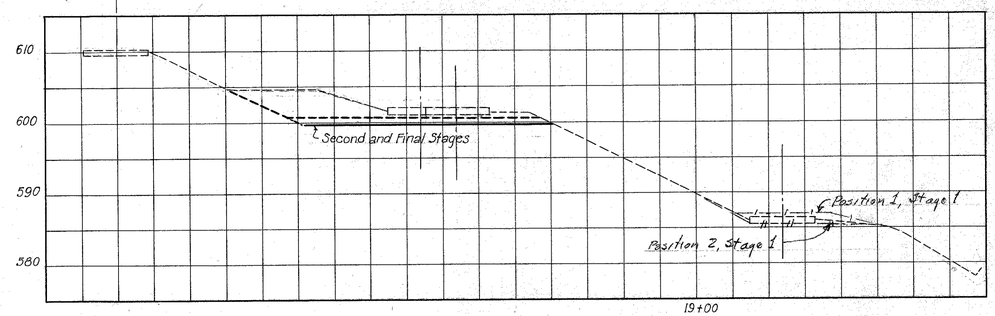
350 FEET RIGHT OF VIADUCT ℄



50 FEET RIGHT OF VIADUCT ℄



100 FEET RIGHT OF VIADUCT ℄



150 FEET RIGHT OF VIADUCT ℄

Position 1 —1—1—1—
Position 2 —11—11—11—

LEGEND
Original ground line
First stage - build anchor and dockwall
Second stage - shift tracks to build footing
Final condition

Note:
Original ground line as shown by Erie Railroad Co. Track Cross Sections Inner Belt Freeway Viaduct at M.P. 1.58 July 7, 1954.
For track locations in plan see Sheet 10.
For profiles at ℄ of tracks see Sheet 40.

PENCILED REVISIONS 11-15-54

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

CROSS SECTIONS FOR
CONSTRUCTION IN ERIE RAILROAD YARD

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 10'-0"
MADE J.G.S. DATE 8-25-54
TRCD A.H. DATE 8-30-54
CKD J.G.S. DATE 8-31-54

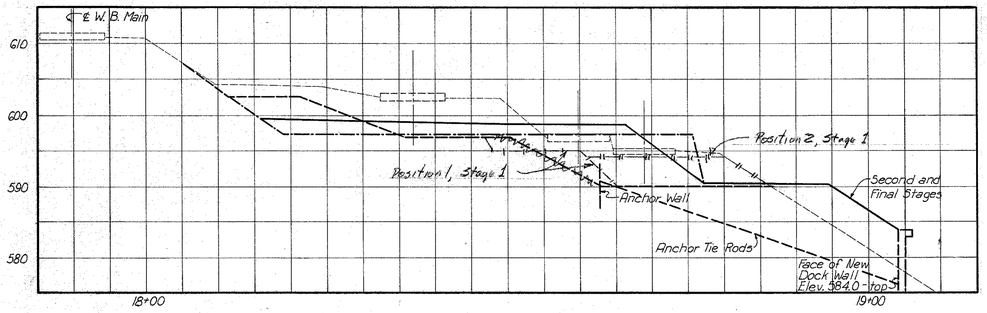
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 1.41

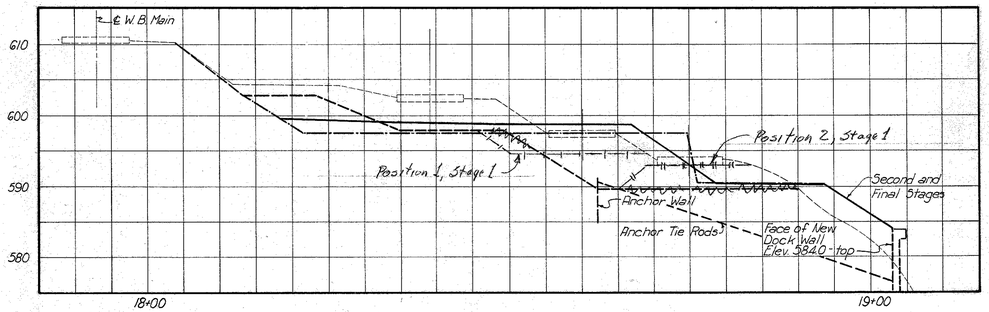
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

42
43

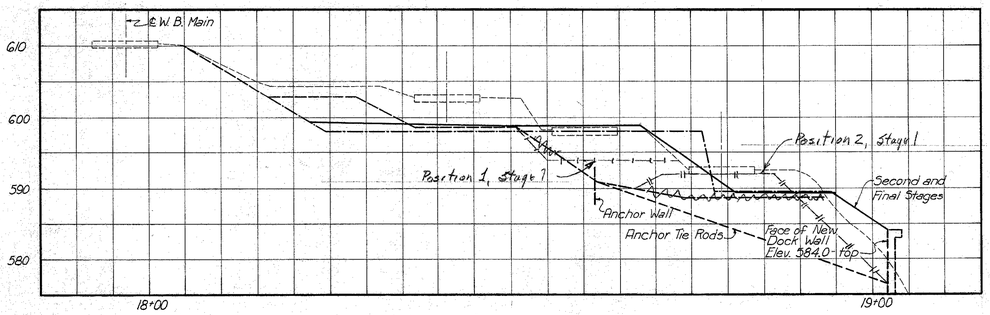
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY – 42 R – 17.50



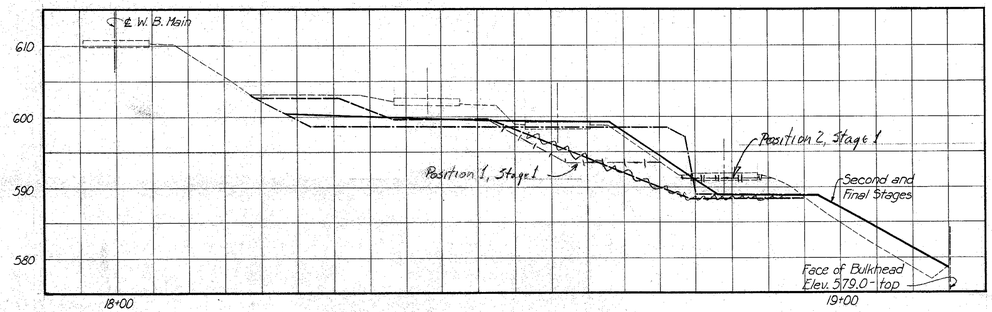
50 FEET LEFT OF VIADUCT ℄



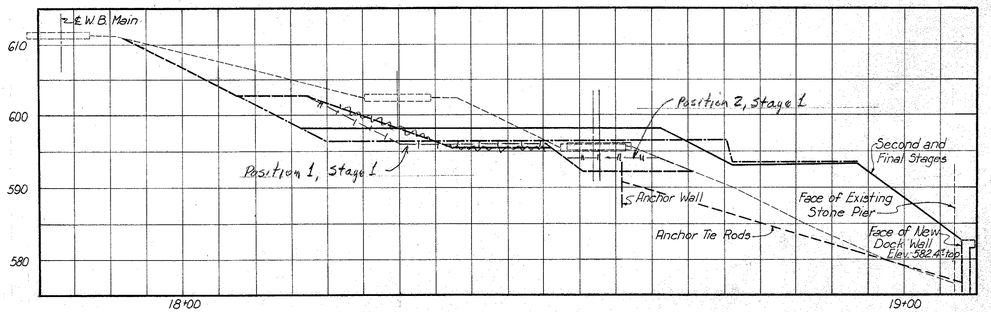
25 FEET LEFT OF VIADUCT ℄



AT ℄ OF VIADUCT

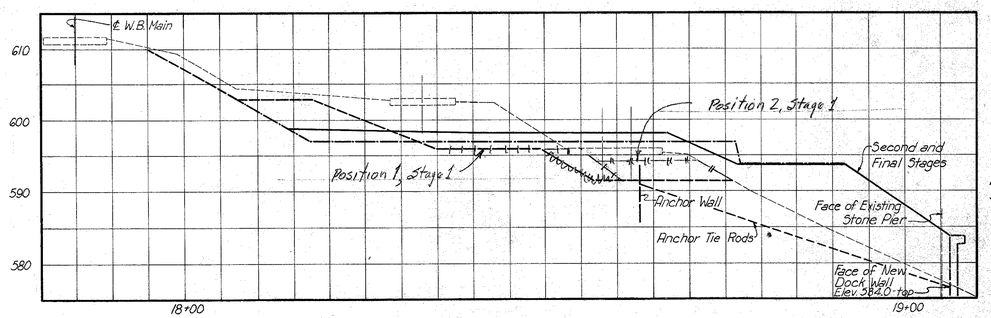


25 FEET RIGHT OF VIADUCT ℄



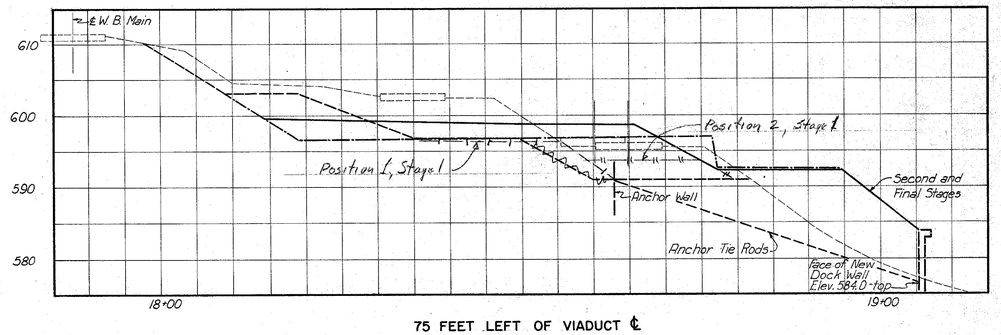
125 FEET LEFT OF VIADUCT ℄

For detail of Existing Pier, see Sheet 9.



100 FEET LEFT OF VIADUCT ℄

For detail of Existing Pier, see Sheet 9.



75 FEET LEFT OF VIADUCT ℄

Position 1
Position 2

LEGEND
Original ground line
First stage - build anchor and dockwall
Second stage - shift tracks to build footing
Final condition

Note: See Sheet 41.

PENCILED REVISIONS 11-15-54

PART 2

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT

CROSS SECTIONS FOR
CONSTRUCTION IN ERIE RAILROAD YARD

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 10'-0"
MADE J.G.S. DATE 8-25-54
TRCD N.A.M. DATE 8-30-54
CKD J.G.S. DATE 8-31-54

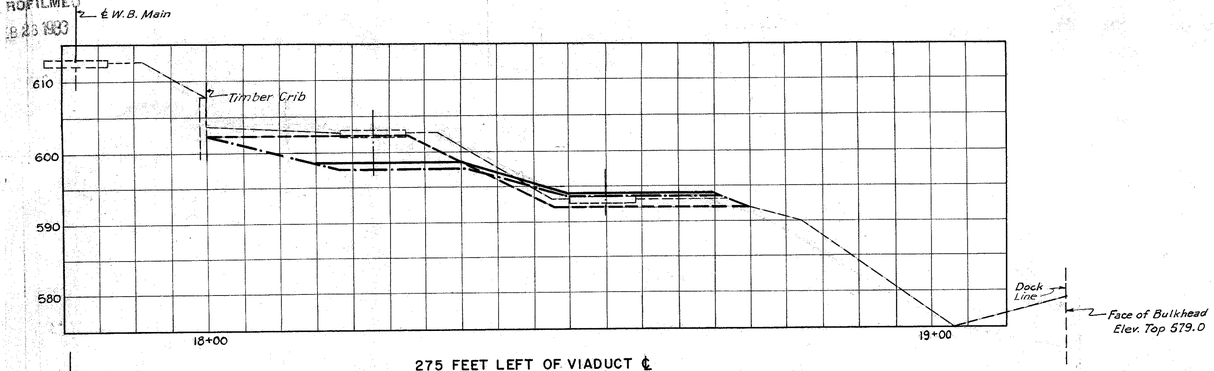
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 1.42

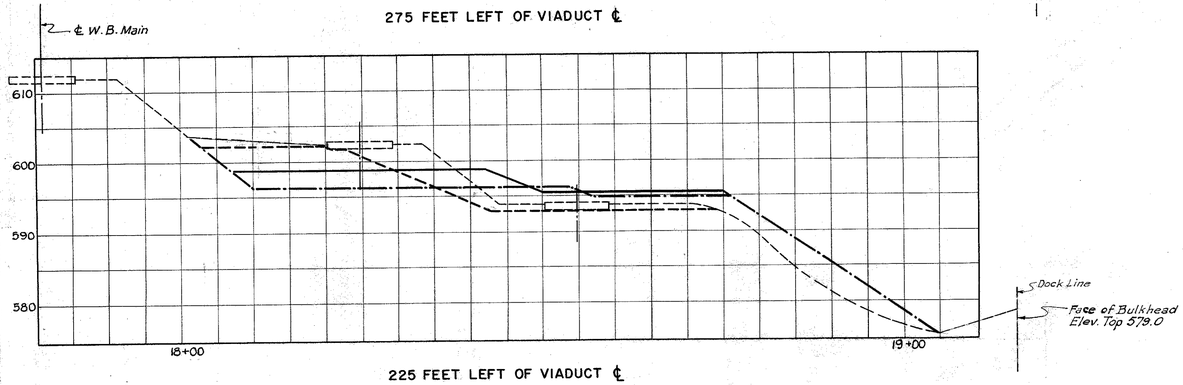
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 (4)	

43
43

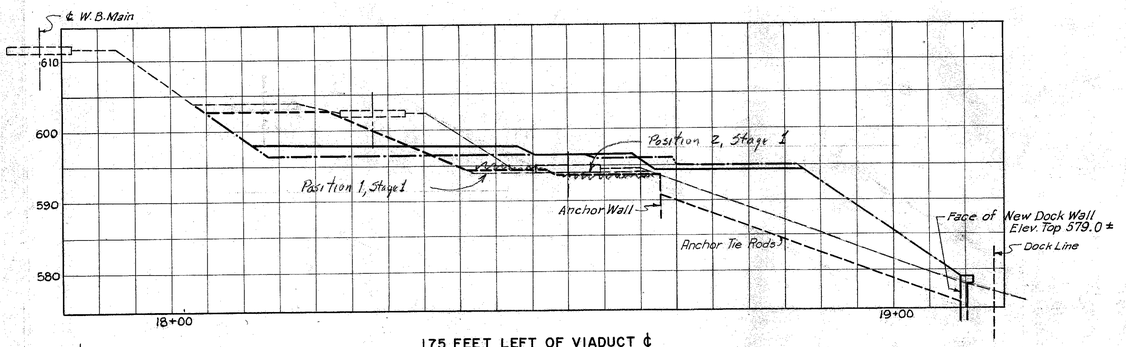
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50



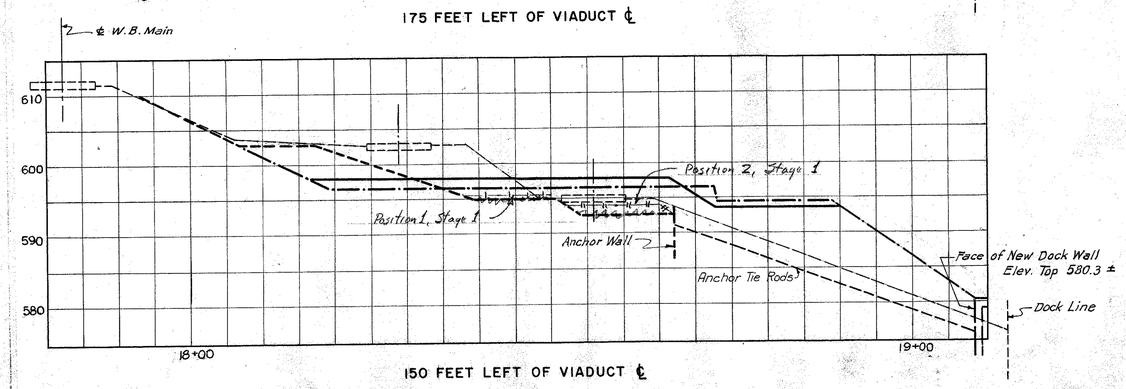
275 FEET LEFT OF VIADUCT ℄



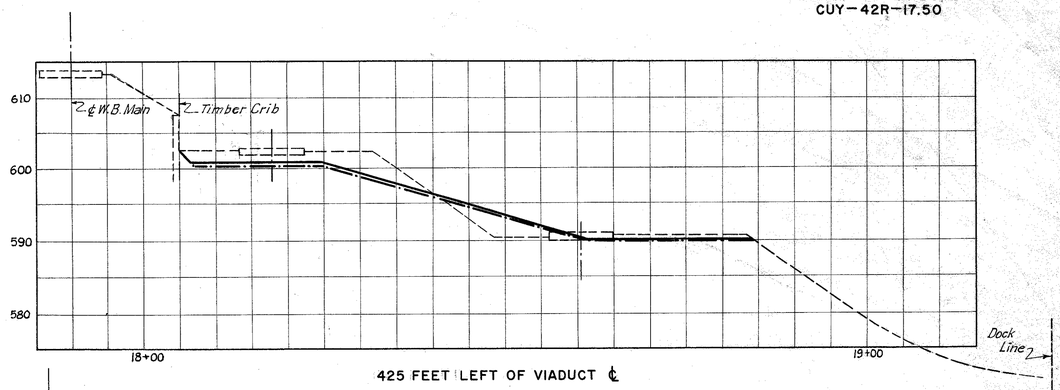
225 FEET LEFT OF VIADUCT ℄



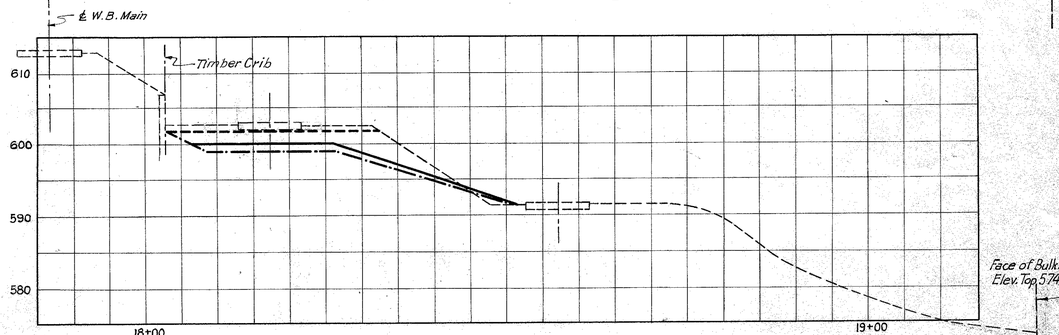
175 FEET LEFT OF VIADUCT ℄



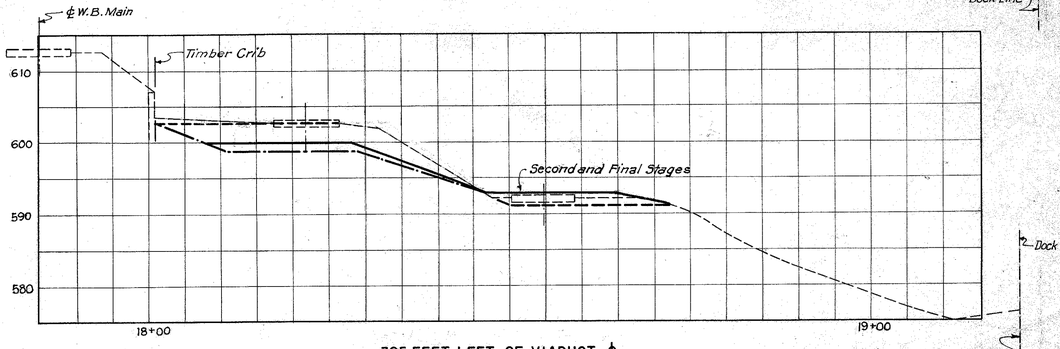
150 FEET LEFT OF VIADUCT ℄



425 FEET LEFT OF VIADUCT ℄



375 FEET LEFT OF VIADUCT ℄



325 FEET LEFT OF VIADUCT ℄

PART 2

- LEGEND -

Position 1
Position 2

- Original ground line
- First Stage - build anchor and dock wall
- Second Stage - shift Tracks to build footing
- Final condition

PENCILED REVISIONS 11-15-54

Note: See Sheet 41.

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

CROSS SECTIONS FOR CONSTRUCTION IN ERIE RAILROAD YARD

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 10'-0"
MADE J.G.S. DATE 8-25-54
TRCD. Y.T.S. DATE 8-30-54
CKD. J.G.S. DATE 8-31-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 1.43

CUY-90-15.45

STATE OF OHIO
DEPARTMENT OF HIGHWAYS

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	STATE	

1
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50 PART 3

CUY - 42R - 17.50

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO. CU-42R-175

CUYAHOGA COUNTY

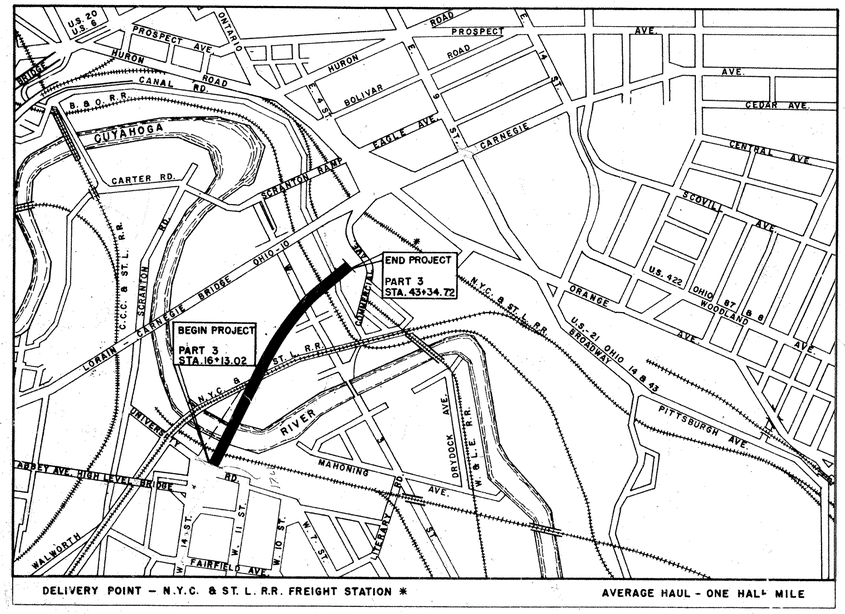
CITY OF CLEVELAND

PART 3 - SUPERSTRUCTURE

THIS IMPROVEMENT HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR OF HIGHWAYS IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 REVISED CODE OF OHIO AND IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC.

INDEX OF SHEETS

1	TITLE SHEET	58-62	TRUSS STRESSES AND DETAILS - UNIT 4
2	GENERAL PLAN AND ELEVATION	63-76	TRUSS STRESSES AND DETAILS - UNIT 5
3-5	GENERAL NOTES	77-79	TRUSS STRESSES AND DETAILS - UNIT 6
6	QUANTITIES	80-87	TRUSS STRESSES AND DETAILS - UNIT 7
7-9	GENERAL LAYOUT, EXISTING CONDITIONS, TEST HOLE BORINGS	88	TRUSS STRESSES - UNIT 8
		89-94	TRUSS STRESSES AND DETAILS - UNIT 9
10, 11	RAILROAD TRACK MODIFICATIONS	95	ANCHOR BOLT PLAN AND DETAILS
12	GRADES AND ELEVATIONS	96-98	SHOES
13-17	GENERAL CROSS SECTIONS	99,100	HANDRAIL, FASCIA, MEDIAN
18-26	FRAMING PLANS	101,102	LADDERS
27, 28	FLOORBEAMS AND STRINGERS	103-109	ROADWAY DRAINAGE
29-34	FLOORBEAM TRUSSES	110-113	ROADWAY EXPANSION JOINTS
35-37	LATERAL BRACING	114-119	ROADWAY SLAB DETAILS
38-43	TRUSS STRESSES AND DETAILS - UNIT 1	120,121	REINFORCEMENT SCHEDULES
44-46	TRUSS STRESSES AND DETAILS - UNIT 2	122	LIGHTING
47-57	TRUSS STRESSES AND DETAILS - UNIT 3		



THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF HIGHWAYS, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH IN THE PLANS AND ESTIMATE.

THE RIGHT OF WAY FOR THIS IMPROVEMENT WILL BE PROVIDED BY THE STATE OF OHIO

APPROVED
DATE 5/11/55 — Louis R. Drasler — DIRECTOR OF PUBLIC SERVICE, CITY OF CLEVELAND

APPROVED
DATE 5-11-55 — Arthur A. Estrin — DIVISION DEPUTY DIRECTOR

APPROVED
DATE 6-2-55 — John J. Meuer — DEPUTY DIRECTOR OF PLANNING AND PROGRAMMING

APPROVED
DATE 5-10-55 — Richard Orth — ENGINEER OF BRIDGES

APPROVED
DATE _____ — ENGINEER OF LOCATION & DESIGN

APPROVED
DATE _____ — DEPUTY DIRECTOR OF DESIGN & CONSTRUCTION

APPROVED
DATE 6-2-55 — D. R. L. Chamberlin — FIRST ASSISTANT DIRECTOR

APPROVED
DATE 6-2-55 — J. D. Linzell — DIRECTOR OF HIGHWAYS

APPROVED
DATE 4-28-55 — B. Blowers — CHIEF ENGINEER, ERIE RAILROAD

APPROVED
DATE 4-27-55 — F. H. Simpson — CHIEF ENGINEER, NEW YORK CENTRAL SYSTEM

APPROVED
DATE 6-2-55 — H. F. Whitmore — CHIEF ENGINEER, NEW YORK, CHICAGO AND SAINT LOUIS RAILROAD CO.

APPROVED
DATE 5-11-55 — K. J. Warner — CHIEF ENGINEER, BALTIMORE AND OHIO RAILROAD

LINE DATA

BEGIN PROJECT	STA. 16 + 13.02
END PROJECT	STA. 43 + 34.72
NET LENGTH	2,721.70 LIN. FT. OR 0.515 MILES

HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

H.G. SOURS
ASSOCIATE
COLUMBUS

R. M. Bergendoff

00078

FILE NO.	CUYAHOGA COUNTY
	SEC
	DATE OF LETTING _____, 195__
	CONTRACT NO. _____

LOCATION PLAN

0 400 800 1200 2400
SCALE IN FEET

PORTION TO BE IMPROVED

SUPPLEMENTAL SPECIFICATIONS			
NUMBER	DATE	NUMBER	DATE
21	5-23-55		
M-206.14	7-15-49		
S-207	4-29-55		

STANDARD DRAWINGS			
NUMBER	DATE	NUMBER	DATE

Revised As Built

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

122
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

No.12 AWG 600V. Conductor with 4/64" insulation and 4/64" Neoprene jacket in 1"ϕ Sheraduct rigid metal conduit or equal from insulating transformer to junction box at each navigation light.

No.12 AWG 600V. extra flexible conductor, ASTM Class "D" with 8/64" insulation and 8/64" Neoprene jacket in flexible coupling equal to Crouse Hinds type EC from junction box at each navigation light to fixture.

Emergency lamp relay

No. 8 AWG, 5000V. Conductor with 10/64" insulation and 8/64" Neoprene jacket. 2 Conductors in 3"ϕ fiber or asbestos cement conduit longitudinally between junction boxes.

13,000 lumen incandescent PS-40; Mongul base lamps on 6.6 Amp series lighting circuit. All street lighting transformers shall be in sidewalk junction boxes.

Junction box at West End Pier

Junction box at East End Pier

If temporary lines to West End Piers are required, they shall be run in the 3"ϕ street lighting circuit.

Junction box for expansion or flexible coupling across expansion or fixed joint. Detail of junction box at right. Also at each navigation light and light pole not located at joint.

Connection through adjacent lighting and to underground vault at Southwest corner of Broadway and Carnegie by others.

UNIT 1 | UNIT 2 | UNIT 3 | UNIT 4 | UNIT 5 | UNIT 6 | UNIT 7 | UNIT 8 | UNIT 9

Connection through adjacent lighting and to underground vault at Southeast corner of Fourteenth and Fairfield by others.

180° Red Duplex Pivot Type Suspension Fixture

360° Green Duplex Pivot Type Suspension Fixture

Insulating transformer to operate 110V.-50W lamps on 6.6 amp. series circuit.

No. 8 AWG, 5000V. Conductor with 10/64" insulation and 4/64" Neoprene jacket 2 Conductors in 2"ϕ Sherarduct rigid metal conduit or equal.

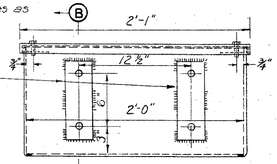
Lamps for all navigation lights shall be 50 watt vibration service.

ROADWAY AND NAVIGATION LIGHTING
SERIES WIRING DIAGRAM
No Scale

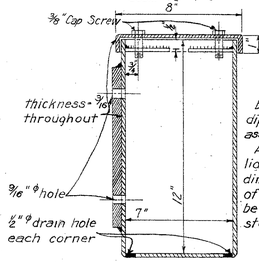
If Approach Spans are not complete when the lighting installation is completed on the Viaduct, pigtails will be left at each end pier for future connection to the next light by others. The city will test the circuits with a meager for acceptable resistance to ground. In such event the contractor shall run a temporary line of 2-#8 600V. conductors from the West end pier to provide for power connection at a point near University Road, for the navigation lights only.

About 15 feet from each end pier, as shown on Framing Plans, Sheets 18 and 26, provide two transverse 2" rigid conduits for future use. Support from stringer bottom flanges by "T and B" adjustable beam flange conduit hangers.
Extend conduits 6" beyond outside stringer flanges and cap.
Conduits and supports are included in Item 5-25.
For division of materials and work for payment, see Sheet 5, paragraph 6.

Spacer PLs-3x½-with ⅞"ϕ holes typical at light poles. At center navigation light and at fixed and expansion joints connection to superstructure varies so these PLs and holes as shown will not apply.



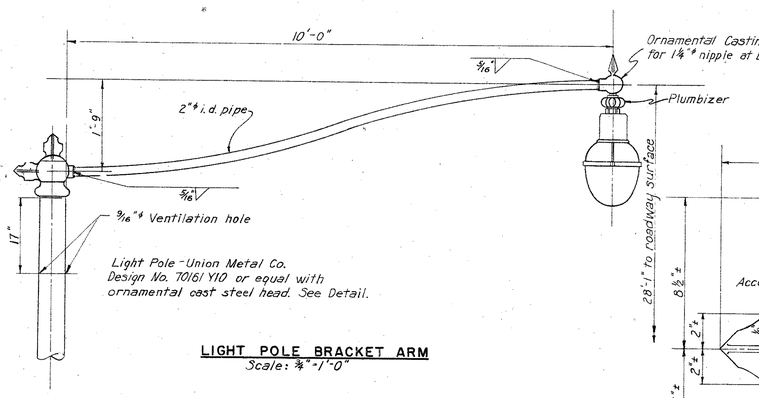
B ELEVATION
Scale 1½"=1'-0"



Box and lid shall be hot dip galvanized after assembly.
A cast iron box and lid with same inside dimensions and minimum of ⅜" wall thickness may be used in place of steel.

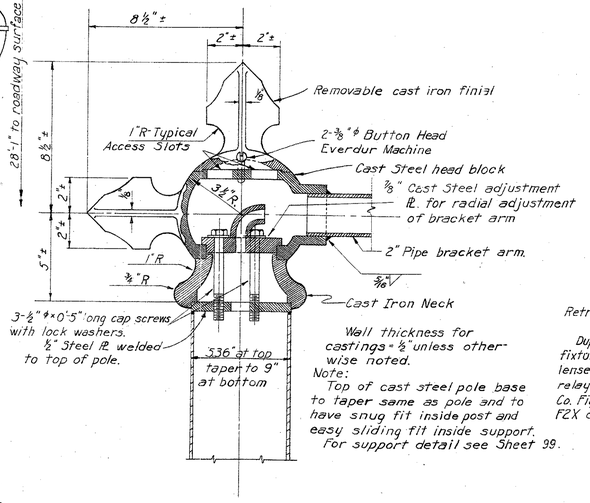
SECTION B-B
Scale: 3"=1'-0"

JUNCTION BOX-84 REQUIRED



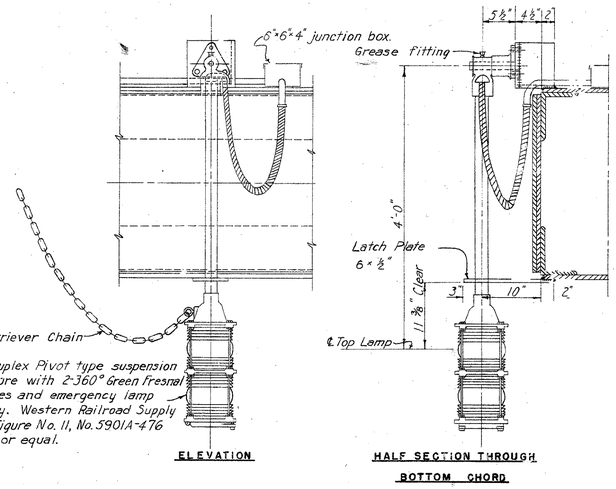
Light Pole - Union Metal Co. Design No. 70161 Y10 or equal with ornamental cast steel head. See Detail.

LIGHT POLE BRACKET ARM
Scale: ¾"=1'-0"



Wall thickness for castings = ½" unless otherwise noted.
Note:
Top of cast steel pole base to taper same as pole and to have snug fit inside post and easy sliding fit inside support. For support detail see Sheet 99.

ORNAMENTAL LIGHT POLE HEAD
Scale: 3"=1'-0"



Duplex Pivot type suspension fixture with 2-360° Green Fresnal lenses and emergency lamp relay. Western Railroad Supply Co. Figure No. 11, No. 5901A-476 FZX or equal.

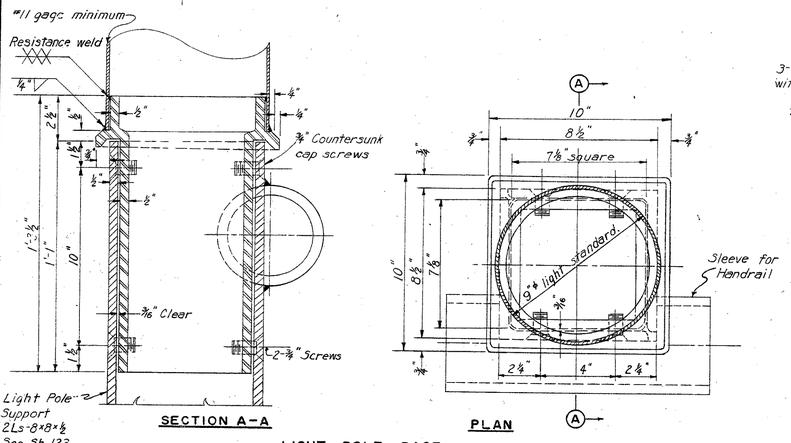
ELEVATION

HALF SECTION THROUGH BOTTOM CHORD

360° GREEN CLEARANCE LIGHT

Duplex pivot type suspension fixture with 2-180° Red Fresnal lenses and emergency lamp relay. Western Railroad Supply Co. Figure No. 2 or equal.

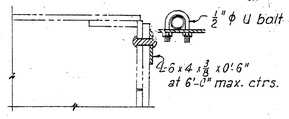
180° RED CHANNEL MARKER



SECTION A-A

PLAN

LIGHT POLE BASE
Scale: 3"=1'-0"



SUPPORTING BRACKET FOR CONDUIT TO NAVIGATION LIGHTS

NAVIGATION LIGHTS
Scale: 1"=1'-0"

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU-42 R-17.5
ROADWAY AND NAVIGATION LIGHTING
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE DNE DATE 12-9-54
TRCD GJK DATE 11-27-54
CKD GA DATE 2-1-55

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.122

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

121
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
UNIT 6							
501	5	313	42'-0"	Str.			13,711
502	5	327	38'-6"	101	37'-8"	10"	13,131
503	5	140	35'-6"	Str.			5,184
504	5	45	35'-0"	Str.			1,643
505	5	72	35'-3"	Str.			2,647
506	5	56	35'-9"	Str.			2,088
507	5	109	38'-6 "	101	38'-8"	10"	4,376
508	5	31	34'-0"	Str.			1,099
509	5	64	33'-9"	Str.			2,253
510	5	84	33'-6"	Str.			2,935
511	5	134	33'-3"	Str.			4,647
404	4	158	5'-9"	120			607
401	4	10	38'-9"	Str.			259
402	4	10	38'-6"	Str.			257
601	6	286	38'-0"	Str.			16,438
602	6	313	50'-3"	Str.			23,624
603	6	31	30'-3"	Str.			1,409
604	6	140	31'-9"	Str.			6,676
605	6	45	31'-3"	Str.			2,112
606	6	72	31'-6"	Str.			3,407
607	6	56	32'-0"	Str.			2,692
608	6	96	38'-6"	Str.			5,551
609	6	64	30'-0"	Str.			2,884
610	6	84	29'-9"	Str.			3,753
611	6	134	29'-6"	Str.			5,937
Total	Unit	6					129,320
UNIT 7							
501	5	908	42'-0"	Str.			39,776
502	5	63	36'-0"	Str.			2,366
503	5	115	35'-6"	Str.			4,256
504	5	59	35'-0"	Str.			2,154
505	5	100	34'-9"	Str.			3,624
506	5	40	34'-6"	Str.			1,439
507	5	434	39'-5 "	101	38'-7"	10"	17,844
508	5	1 Ser. 188 2 Ser. 105	17'-7" to 22'-2"	100	15-11"to20'-6"	10"	2,197
509	5	2 Ser. 105	34'-9" to 39'-0"	101	33-11"to38'-2"	10"	8,077
510	5	1	18'-2"	101	17'-4"	10"	19
511	5	218	51'-3"	101	50'-5"	10"	11,653
512	5	1 Ser. 106	17'-8" to 21'-11"	100	16'-0" to 20'-3"	10"	2,188
513	5	1	22'-2"	100	20'-6"	10"	23
514	5	2	5'-8"	101	4'-10"	10"	12
515	5	2	34'-9"	101	33'-11"	10"	72
516	5	74	36'-6"	Str.			2,817
517	5	78	32'-3"	Str.			2,624
518	5	2	17'-7"	100	15'-11"	10"	37
519	5	103	34'-3"	Str.			3,679
520	5	41	34'-0"	Str.			1,454
521	5	247	33'-9"	Str.			8,695
522	5	57	33'-6"	Str.			1,992
523	5	145	33'-3"	Str.			5,029
524	5	70	33'-0"	Str.			2,409
525	5	79	32'-9"	Str.			2,699
526	5	36	32'-6"	Str.			1,220
527	5	176	35'-3"	Str.			6,471
528	5	140	35'-9"	Str.			5,220
529	5	64	36'-3"	Str.			2,420
530	5	96	37'-0"	Str.			3,705
531	5	2	42'-8"	101	41'-10"	10"	89
532	5	2	25'-0"	Str.			52
533	5	1	13'-8"	101	12'-10"	10"	14
534	5	216	40'-4"	101	39'-6"	10"	9,087
535	5	38	32'-0"	Str.			1,268
536	5	1	25'-6"	101	24'-8"	10"	27
537	5	1	16'-0"	Str.			17
538	5	1	12'-9"	Str.			13
539	5	1	16'-8"	101	15'-10"	10"	17
540	5	1	33'-8"	101	32'-10"	10"	35
541	5	1	9'-2"	101	8'-4"	10"	10
542	5	1	21-11"	100	20'-3"	10"	23
543	5	4 Ser. 3	7'-9" to 31'-9"	Str.			247
544	5	4 Ser. 4	8'-0" to 37'-0"	Str.			375

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
UNIT 7 CONTINUED							
545	5	4	20'-9"	Str.			87
546	5	4	29'-9"	Str.			124
547	5	2	20'-8"	101	19'-10"	10"	43
404	4	461	5'-9"	120			1771
401	4	30	33'-0"	Str.			661
402	4	20	37'-6"	Str.			501
403	4	15	34'-0"	Str.			341
601	6	644	3'-6'	101	2'-6"	1'-0"	3,386
602	6	908	50'-3"	Str.			68,532
603	6	63	32'-3"	Str.			3,052
604	6	115	31'-9"	Str.			5,484
605	6	59	31'-3"	Str.			2,769
606	6	100	31'-0"	Str.			4,656
607	6	40	30'-9"	Str.			1,847
608	6	1 Ser. 382 2 Ser. 93	38'-6"	Str.			22,090
609	6	1 Ser. 92	16'-3" to 20'-9"	Str.			2,584
610	6	2 Ser. 92	34'-3"to38'-6"	Str.			10,053
611	6	1	17'-6"	Str.			26
612	6	192	50'-9"	Str.			14,635
613	6	1 Ser. 92	16'-3"to20'-6"	Str.			2,567
614	6	1	20'-9"	Str.			31
615	6	2	34'-3"	Str.			103
616	6	103	30'-6"	Str.			4,719
617	6	2	42'-0"	Str.			126
618	6	74	32'-9"	Str.			3,640
619	6	78	28'-6"	Str.			3,339
620	6	2	16'-3"	Str.			49
621	6	41	30'-3"	Str.			1,863
622	6	247	30'-0"	Str.			11,130
623	6	57	29'-9"	Str.			2,547
624	6	145	29'-6"	Str.			6,425
625	6	70	29'-3"	Str.			3,075
626	6	78	29'-0"	Str.			3,398
627	6	36	28'-9"	Str.			1,555
628	6	176	31'-6"	Str.			8,327
629	6	140	32'-0"	Str.			6,729
630	6	64	32'-6"	Str.			3,124
631	6	96	33'-3"	Str.			4,794
632	6	2	33'-0"	Str.			99
633	6	3	25'-0"	Str.			113
634	6	2	13'-0"	Str.			39
635	6	190	40'-0"	Str.			11,415
636	6	38	28'-3"	Str.			1,612
637	6	2	16'-0"	Str.			48
638	6	1	8'-6"	Str.			13
639	6	1	20'-6"	Str.			31
640	6	4 Ser. 3	4'-0" to 28'-0"	Str.			288
641	6	4 Ser. 4	12'-0"to41'-0"	Str.			637
642	6	4	17'-0"	Str.			102
643	6	4	26'-0"	Str.			156
644	6	2	5'-0"	Str.			15
645	6	2	20'-0"	Str.			60
Total	Unit	7					382,258

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
UNIT 8							
501	5	309	42'-0"	Str.			13,536
502	5	24	36'-0"	Str.			901
503	5	26	33'-3"	Str.			902
504	5	26	33'-0"	Str.			895
505	5	25	32'-9"	Str.			854
506	5	51	32'-6"	Str.			1,729
507	5	26	35'-9"	Str.			969
508	5	23	36'-3"	Str.			870
509	5	80	37'-0"	Str.			3,087
510	5	106	36'-9"	Str.			4,063
511	5	1	24'-9"	Str.			26
512	5	1	13'-8"	101	12'-10"	10"	14
513	5	29	32'-0"	Str.			968
514	5	217	38'-6"	101	37'-8"	10"	8,714
515	5	218	38'-2"	101	37'-4"	10"	8,678
516	5	50	36'-6"	Str.			1,903
517	5	152	32'-3"	Str.			5,113
404	4	158	5'-9"	120			607
401	4	10	38'-9"	Str.			259
402	4	10	38'-6"	Str.			257
601	6	92	3'-6"	101	2'-6"	1'-0"	484
602	6	309	50'-3"	Str.			23,322
603	6	24	32'-3"	Str.			1,163
604	6	26	29'-6"	Str.			1,152
605	6	26	29'-3"	Str.			1,142
606	6	25	29'-0"	Str.			1,089
607	6	51	28'-9"	Str.			2,202
608	6	26	32'-0"	Str.			1,250
609	6	23	32'-6"	Str.			1,123
610	6	80	33'-3"	Str.			3,995
611	6	106	33'-0"	Str.			5,254
612	6	1	25'-0"	Str.			38
613	6	1	13'-0"	Str.			20
614	6	29	28'-3"	Str.			1,231
615	6	191	38'-0"	Str.			10,902
616	6	152	28'-6"	Str.			6,507
617	6	192	37'-9"	Str.			10,886
618	6	50	32'-9"	Str.			2,460
Total	Unit	8					128,565
UNIT 9							
501	5	720	42'-0"	Str.			31,540
502	5	29	36'-0"	Str.			1,089
503	5	22	35'-6"	Str.			815
504	5	19	35'-0"	Str.			694
505	5	21	34'-9"	Str.			761
506	5	1068	34'-6"	Str.			38,430
507	5	218	36'-0"	101	35'-2"	10"	8,185
508	5	109	36'-3"	Str.			4,121
509	5	136	20'-8"	100	19'-0"	10"	2,932
510	5	27	45'-1"	100	43'-5"	10"	1,270
511	5	28	45'-4"	100	43'-8"	10"	1,324
512	5	218	40'-8"	101	39'-10"	10"	9,247
513	5	27	45'-7"	100	43'-11"	10"	1,284
514	5	27	45'-10"	100	44'-2"	10"	1,291
516	5	16	36'-6"	Str.			609
519	5	27	34'-3"	Str.			965
520	5	13	34'-0"	Str.			461
521	5	25	33'-9"	Str.			880
522	5	25	33'-6"	Str.			874
523	5	25	33'-3"	Str.			867
524	5	22	33'-0"	Str.			757
525	5	27	32'-9"	Str.			922
526	5	25	32'-6"	Str.			847
527	5	22	35'-3"	Str.			809
528	5	26	35'-9"	Str.			969
529	5	29	36'-3"	Str.			1,096

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
UNIT 9 CONTINUED							
530	5	28	20'-1"	100	18'-5"	10"	587
531	5	27	20'-4"	100	18'-8"	10"	573
532	5	26	20'-11"	100	19'-3"	10"	567
533	5	1	21'-3"	100	19'-7"	10"	22
515	5	216	40'-4"	101	39'-6"	10"	9,087
517	5	1	29'-5"	101	28'-7"	10"	31
518	5	1	9'-9"	Str.			10
404	4	363	5'-9"	120			1394
401	4	30	42'-9"	Str.			857
402	4	15	34'-0"	Str.			341
601	6	644	3'-6"	101	2'-6"	1'-0"	3,386
602	6	720	50'-3"	Str.			54,342
603	6	29	32'-3"	Str.			1,404
604	6	22	31'-9"	Str.			1,048
605	6	19	31'-3'	Str.			892
606	6	21	31'-0"	Str.			978
607	6	1068	30'-9"	Str.			49,327
608	6	189	35'-6"	Str.			10,078
609	6	94	36'-6"	Str.			5,153
610	6	118	19'-3"	Str.			3,412
611	6	23	43'-9"	Str.			1,511
612	6	24	44'-0"	Str.			1,586
613	6	24	44'-3"	Str.			1,595
614	6	188	40'-3"	Str.			11,366
615	6	23	44'-6"	Str.			1,537
616	6	27	30'-6"	Str.			1,237
618	6	16	32'-9"	Str.			787
621	6	13	30'-3"	Str.			591
622	6	25	30'-0"	Str.			1,127
623	6	25	29'-9"	Str.			1,117
624	6	25	29'-6"	Str.			1,108
625	6	22	29'-3"	Str.			967
626	6	28	29'-0"	Str.			1,220
627	6	25	28'-9"	Str.			1,080
628	6	21	31'-6"	Str.			994
629	6	26	32'-0"	Str.			1,250
630	6	29	32'-6"	Str.			1,416
631	6	24	18'-9"	Str.			676
632	6	24	19'-0"	Str.			685
633	6	23	19'-6"	Str.			674
617	6	1	19'-9"	Str.			30
619	6	190	40'-0"	Str.			11,415
620	6	1	10'-0"	Str.			15
Total	Unit	9					300,512

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17.5
DECK SLAB
REINFORCEMENT SCHEDULE
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE RK DATE 2-25-54
TRCD. DATE
CKD. D.A.R. DATE 9-10-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.121

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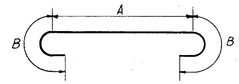
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	-	

120
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



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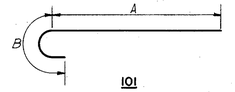

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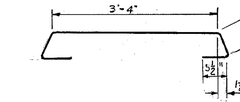


120

BENDING DIAGRAMS

UNIT 1

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
501	5	669	42'-0"	Str.			29,306
502	5	218	20'-8"	100	19'-0"	10"	4,700
503	5	218	28'-2"	101	27'-0"	10"	6,405
504	5	109	45'-8"	100	44'-0"	10"	5,192
505	5	218	40'-0"	101	39'-2"	10"	9,095
506	5	1338	34'-6"	Str.			48,146
507	5	218	36'-0"	101	35'-2"	10"	8,185
508	5	109	36'-3"	Str.			4,121
404	4	339	5'-8"	120			1,302
401	4	15	44'-9"	Str.			428
402	4	30	34'-0"	Str.			681
601	6	644	3'-6"	101	2'-6"	1'-0"	3,386
602	6	669	50'-3"	Str.			50,493
603	6	188	27'-9	Str.			7,836
604	6	94	44'-6	Str.			6,283
605	6	188	39'-9"	Str.			11,224
606	6	188	19'-3"	Str.			5,436
607	6	1338	30'-9"	Str.			61,796
608	6	188	35'-6"	Str.			10,024
609	6	94	36'-6"	Str.			5,153
Total	Unit	1					279,192

UNIT 2

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
501	5	414	42'-0"	Str.			18,136
502	5	218	50'-7"	101	49'-9"	10"	11,501
503	5	218	51'-0"	101	50'-9"	10"	11,596
504	5	828	34'-6"	Str.			29,794
404	4	209	5'-9"	120			803
401	4	20	50'-9"	Str.			678
601	6	92	3'-6"	101	2'-6"	1'-0"	484
602	6	602	50'-3"	Str.			45,436
603	6	188	50'-6"	Str.			14,260
604	6	828	30'-9"	Str.			38,242
Total	Unit	2					170,930

UNIT 3

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
501	5	922	42'-0"	St.			40,389
502	5	218	39'-0"	101	38'-2"	10"	8,868
503	5	136	20'-6"	100	18'-10"	10"	2,908
504	5	328	38'-3"	101	37'-5"	10"	13,085
505	5	218	51'-3"	101	50'-5"	10"	11,653
506	5	108	38'-6"	101	37'-8"	10"	4,337
507	5	42	34'-9"	Str.			1,522
508	5	28	20'-0"	100	18'-4"	10"	584
509	5	54	35'-3"	Str.			1,985
510	5	56	35'-9"	Str.			2,088
511	5	54	36'-3"	Str.			2,042
512	5	54	34'-0"	Str.			1,915
513	5	56	33'-6"	Str.			1,957
514	5	54	33'-0"	Str.			1,859
515	5	1	14'-3"	101	13'-5"	10"	15
516	5	216	40'-0"	101	39'-2"	10"	9,012
517	5	1	29'-3"	Str.			31
518	5	1	17'-6"	Str.			18
519	5	1474	34'-6"	Str.			53,040
520	5	26	20'-9"	100	19'-1"	10"	563
521	5	27	20'-3"	100	18'-7"	10"	570
522	5	1	21'-0"	100	19'-4"	10"	22
404	4	468	5'-9"	120			1798
401	4	15	33'-3"	Str.			333
402	4	20	38'-6"	Str.			514
403	4	30	34'-0"	Str.			681
601	6	922	50'-3"	Str.			69,588
602	6	188	38'-6"	Str.			10,872
603	6	118	19'-3"	Str.			3,412
604	6	282	37'-9"	Str.			15,990
605	6	188	50'-9"	Str.			14,331
606	6	94	38'-0"	Str.			5,365
607	6	42	31'-0"	Str.			1,956
608	6	24	18'-9"	Str.			676
609	6	54	31'-6"	Str.			2,555
610	6	56	32'-0"	Str.			2,692
611	6	54	32'-6"	Str.			2,636
612	6	54	30'-3"	Str.			2,454
613	6	56	29'-9"	Str.			2,502
614	6	54	29'-3"	Str.			2,372
615	6	1	13'-6"	Str.			20
616	6	190	39'-6"	Str.			11,273
617	6	1	29'-6"	Str.			44
618	6	1	17'-9"	Str.			27
619	6	1474	30'-9"	Str.			68,079
620	6	644	3'-6"	101	2'-6"	1'-0"	3,386
621	6	23	19'-6"	Str.			674
622	6	24	19'-0"	Str.			685
623	6	1	19'-9"	Str.			30
Total	Unit	3					383,408

UNIT 4

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
501	5	414	42'-0"	Str.			18,136
502	5	173	36'-9"	Str.			6,631
503	5	173	32'-6"	Str.			5,864
504	5	172	37'-3"	Str.			6,683
505	5	172	32'-0"	Str.			5,741
506	5	69	36'-3"	Str.			2,609
507	5	69	33'-0"	Str.			2,375
508	5	218	50'-8"	101	49'-10"	10"	11,520
509	5	216	51'-0"	101	50'-2"	10"	11,490
510	5	1	22'-0"	101	21'-2"	10"	23
511	5	1	21'-3"	Str.			22
512	5	1	39'-9"	Str.			41
513	5	1	9'-8"	101	8'-10"	10"	10
404	4	209	5'-9"	120			803
401	4	15	34'-0"	Str.			341
402	4	15	34'-3"	Str.			343
601	6	414	50'-3"	Str.			31,247
602	6	173	33'-0"	Str.			8,575
603	6	173	28'-9"	Str.			7,471
604	6	172	33'-6"	Str.			8,655
605	6	172	28'-3"	Str.			7,298
606	6	69	32'-6"	Str.			3,368
607	6	69	29'-3"	Str.			3,031
608	6	192	50'-0"	Str.			14,419
609	6	190	50'-6"	Str.			14,412
610	6	2	21'-3"	Str.			64
611	6	1	40'-0"	Str.			60
612	6	1	9'-0"	Str.			14
613	6	92	3'-6"	101	2'-6"	1'-0"	484
Total	Unit	4					171,730

UNIT 5

MARK	SIZE	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B	WEIGHT LBS.
501	5	903	42'-0"	Str.			39,557
502	5	74	36'-0"	Str.			2,779
503	5	89	35'-6"	Str.			3,295
504	5	43	35'-0"	Str.			1,570
505	5	78	34'-9"	Str.			2,827
506	5	67	34'-6"	Str.			2,411
507	5	429	38'-11"	101	38'-1"	10"	17,413
508	5	1 Sec. 106	17'-7"to21'-10"	100	15'-11"to20'-2"	10"	2,179
509	5	1	21'-10"	100	20'-2"	10"	23
510	5	1	17'-7"	100	15'-11"	10"	18
511	5	218	51'-3"	101	50'-5"	10"	11,653
512	5	1	13'-8"	101	12'-10"	10"	14
513	5	1	36'-2"	101	35'-4"	10"	38
514	5	216	38'-6"	101	37'-8"	10"	8,674
515	5	1	29'-0"	Str.			30
516	5	77	36'-6"	Str.			2,931
517	5	36	32'-3"	Str.			1,211
518	5	2	34'-8"	101	33'-10"	10"	72
519	5	64	34'-3"	Str.			2,286
520	5	60	34'-0"	Str.			2,128
521	5	178	33'-9"	Str.			6,266
522	5	158	33'-6"	Str.			5,521
523	5	110	33'-3"	Str.			3,815
524	5	56	33'-0"	Str.			1,927
525	5	40	32'-9"	Str.			1,366
526	5	81	32'-6"	Str.			2,746
527	5	188	35'-3"	Str.			6,912
528	5	140	35'-9"	Str.			5,220
529	5	69	36'-3"	Str.			2,609
530	5	75	37'-0"	Str.			2,894
531	5	36	36'-9"	Str.			1,380
532	5	2 Sec. 4	41'-0" to 42'-0"	Str.			192
533	5	2	11'-0"	Str.			23
534	5	2	23'-0"	Str.			48
535	5	95	32'-0"	Str.			3,171
536	5	2	14'-0"	Str.			29
537	5	2	26'-0"	Str.			54
538	5	3	39'-8"	101	38'-10"	10"	124
539	5	2	21'-2"	101	20'-4"	10"	44
540	5	2	28'-2"	101	27'-4"	10"	59
541	5	1 Sec. 105	34'-10"to39'-1"	101	34'-0"to38'-3"	10"	4,047
542	5	1	34'-10"	101	34'-0"	10"	36
543	5	1	39'-1"	101	38'-3"	10"	41
544	5	1 Sec. 105	34'-7" to 39'-4"	101	33'-9"to38'-6"	10"	4,047
545	5	2	10'-0"	Str.			21
546	5	2	21'-0"	Str.			44
547	5	2 Sec. 3	13'-0" to 35'-0"	Str.			150
548	5	2	16'-0"	Str.			33
549	5	2	27'-0"	Str.			56
550	5	1 Sec. 106	17'-4" to 22'-0"	100	15'-8"to 20'-4"	10"	2,174
551	5	1	17'-4"	100	15'-8"	10"	18
552	5	1	22'-1"	100	20'-5"	10"	23
553	5	1	16'-2"	101	15'-4"	10"	17
554	5	1	7'-6"	Str.			8
555	5	1	18'-11"	101	18'-1"	10"	20
556	5	1	31'-2"	101	30'-4"	10"	33
557	5	1	17'-9"	Str.			19
404	4	457	51'-9"	120			1580
401	4	30	33'-0"	Str.			661
402	4	20	37'-6"	Str.			501
403	4	15	34'-0"	Str.			341
601	6	552	3'-6"	101	2'-6"	1'-0"	2,902
602	6	903	50'-3"	Str.			68,154
603	6	74	32'-3"	Str.			3,585
604	6	88	31'-9"	Str.			4,197
605	6	43	31'-3"	Str.			2,018
606	6	78	31'-0"	Str.			3,632
607	6	67	30'-9"	Str.			3,095
608	6	377	38'-6"	Str.			21,801
609	6	1 Sec. 56	16'-3" to 20'-6"	Str.			2,567
610	6	3	20'-6"	Str.			92
611	6	1	16'-3"	Str.			24
612	6	192	50'-9"	Str.			14,635
613	6	1	13'-0"	Str.			20
614	6	2	35'-6"	Str.			107
615	6	190	38'-0"	Str.			10,844
616	6	65	30'-6"	Str.			2,978
617	6	1	17'-9"	Str.			27
618	6	77	32'-9"	Str.			3,788
619	6	36	28'-6"	Str.			1,541
620	6	3	34'-0"	Str.			153
621	6	59	30'-3"	Str.			2,681
622	6	178	30'-0"	Str.			8,021
623	6	158	29'-9"	Str.			7,060
624	6	110	29'-6"	Str.			4,874
625	6	56	29'-3"	Str.			2,460
626	6	41	29'-0"	Str.			1,786
627	6	81	28'-9"	Str.			3,498
628	6	188	31'-6"	Str.			8,895
629	6	140	32'-0"	Str.			6,729
630	6	69	32'-6"	Str.			3,368
631	6	75	33'-3"	Str.			3,746
632	6	36	33'-0"	Str.			1,784
633	6	2 Sec. 4	8'-0" to 46'-0"	Str.			324
634	6	2	11'-0"	Str.			33
635	6	4	23'-0"	Str.			138
636	6	95	28'-3"	Str.			4,031
637	6	4	10'-0"	Str.			60
638	6	2	22'-0"	Str.			66
639	6	3	39'-0"	Str.			176
640	6	2	27'-6"	Str.			83
41	6	1 Sec. 42	34'-3" to 38'-6"	Str.			5,026
642	6	1	38'-6"	Str.			58
643	6	1	34'-3"	Str.			51
644	6	1 Sec. 42	34'-0"to38'-9"	Str.			5,026
645	6	2	21'-0"	Str.			63
646	6	2 Sec. 4	16'-0" to 39'-0"	Str.			270
647	6	2	12'-0"	Str.			36
648	6	1 Sec. 56	16'-0"to20'-9"	Str.			2,567
649	6	1	16'-0"	Str.			24
650	6	1	20'-9"	Str.			31
651	6	1	15'-6"	Str.			23
652	6	1	7'-6"	Str.			11
653	6	1	18'-3"	Str.			27
Total	Unit	5					378,565

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU-42R-17.5
DECK SLAB
REINFORCEMENT SCHEDULE
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE R.K. DATE 2-25-54
TRCD. DATE
CKD. E.L.R. DATE 9-23-54

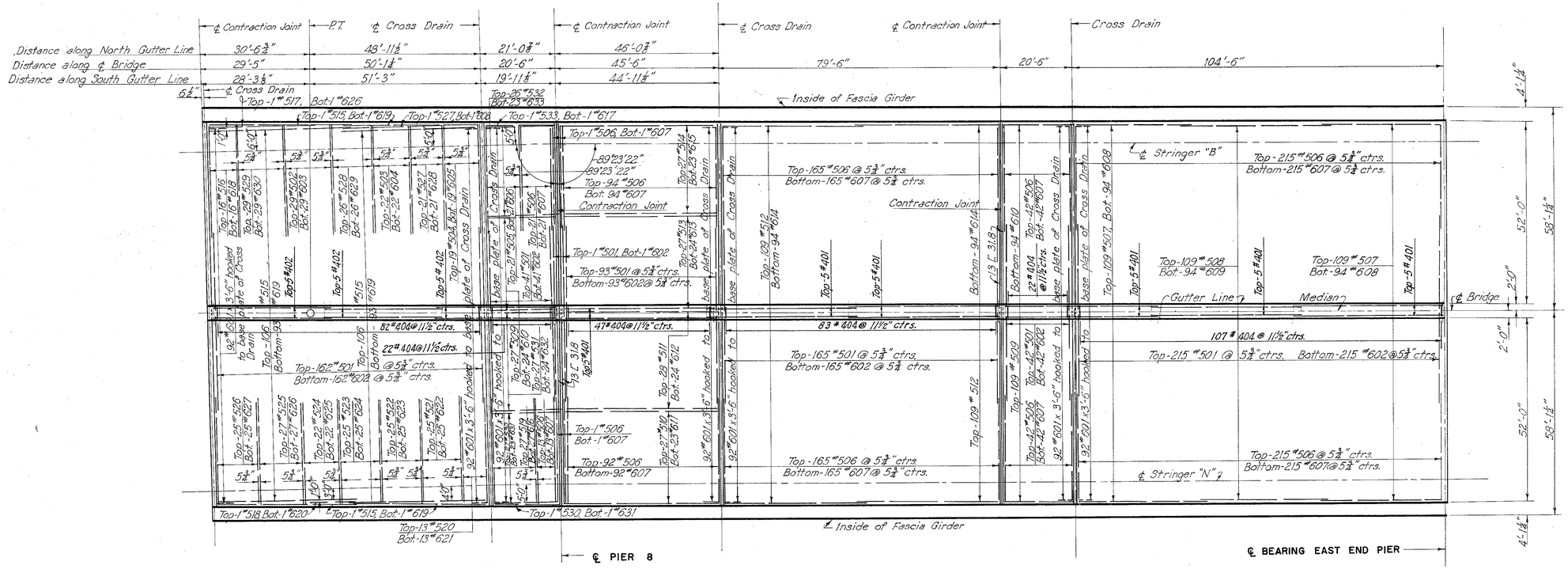
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.120

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

119
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



SLAB PLAN - UNIT 9

Notes:

All longitudinal bars are to be parallel to stringer except bars at the edges of slab which are parallel to gutter lines. For spacing of longitudinal bars, see "Typical Section, Sheet

All transverse bars are to be normal to stringer and at 5 3/4" ctrs. except extra bars parallel to edge of joints and cross drains. Top transverse are to be spliced at mid-point between Stringers "E" and "F" and Stringers "J" and "K". Bottom transverse bars are to be spliced over Stringer "E" and Stringer "K"

For Details of Contraction Joint, see Sheet 114

For Reinforcing Steel Schedule, see Sheet 121.

For Details of Cross Drain, See Sheet 105.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R - 17 5

SLAB PLAN
UNIT 9

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/8" = 1'-0"
MADE R.K. DATE 2-4-54
TRCD BMO DATE 8-26-54
CKD DEE DATE 9-11-54

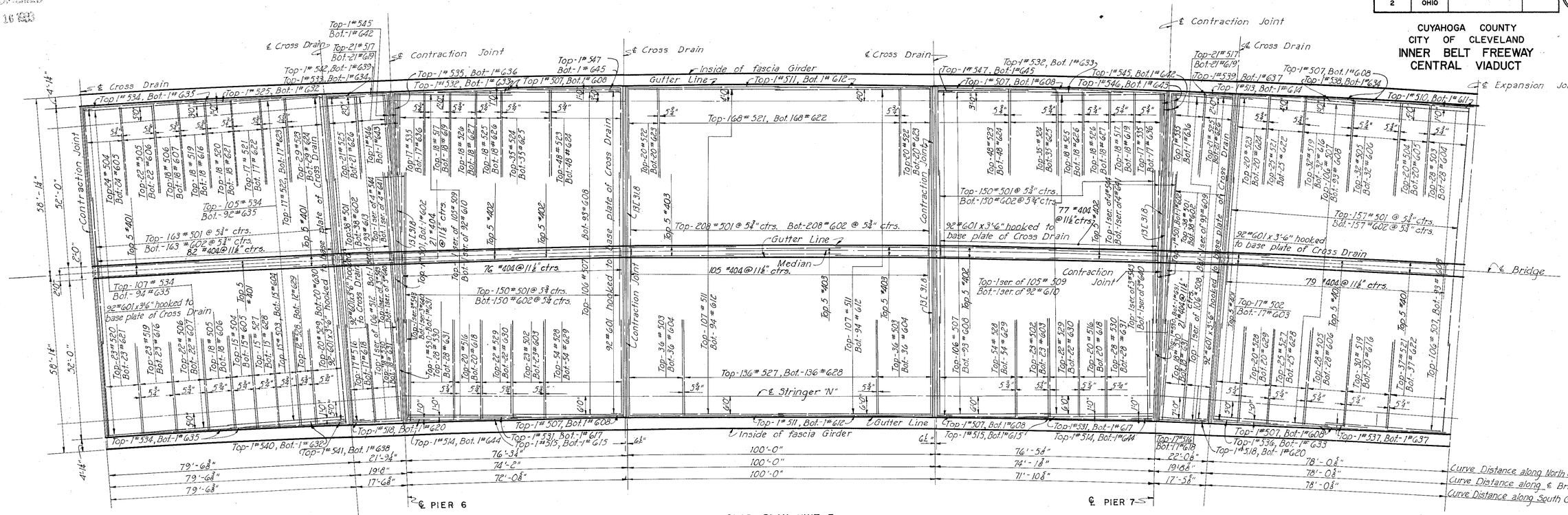
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.119

231

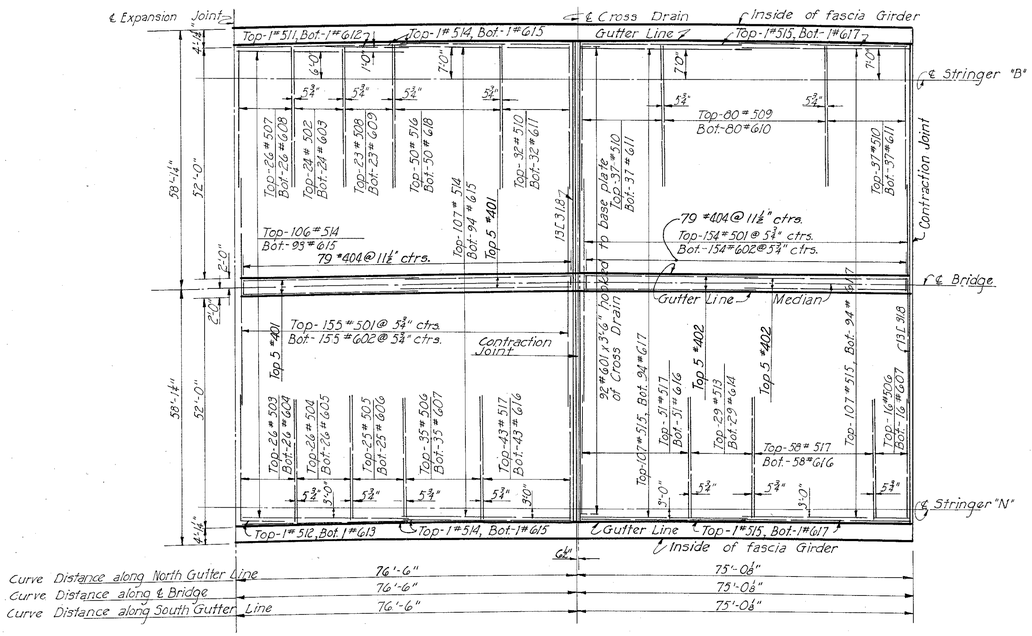
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

118
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



SLAB PLAN-UNIT 7



SLAB PLAN-UNIT 8

All longitudinal bars are to be parellel to stringer except the bars at the edges of slab which are parallel to gutter lines. For spacing of longitudinal bars, see Typical Section, Sheet 114.

All transverse bars are to be normal to stringers and at 5¾" ctrs. except extra bars parallel to edge of joints and cross drains. Top transverse bars are to be spliced at mid-point between Stringers "E" and "F" and Stringers "J" and "K". Bottom transverse bars are to be spliced over Stringer "E" and Stringer "K".

For Details of Contraction Joint, See Sheet 114
For Reinforcing Steel Schedule, See Sheet 121
For Detail of Cross Drain, See Sheet 105, 107 and 109

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5
SLAB PLAN
UNITS 7 AND 8
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/8" = 1'-0"
MADE DK DATE 8-24-54
TRCD LH DATE 8-24-54
CKD RGF DATE 9-27-54
DES

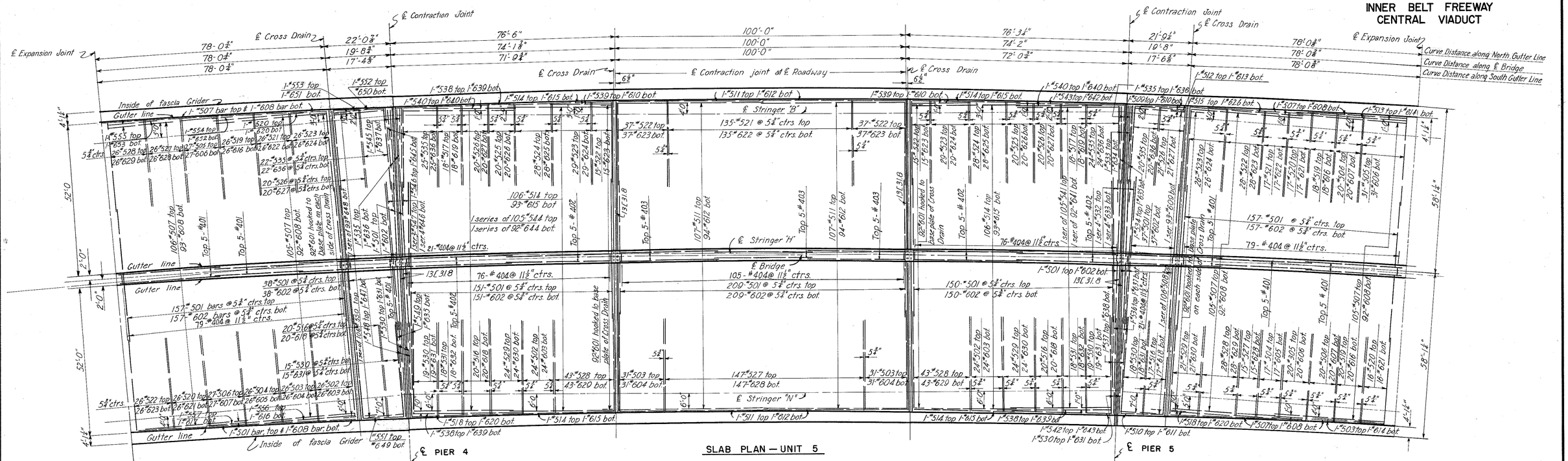
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.118

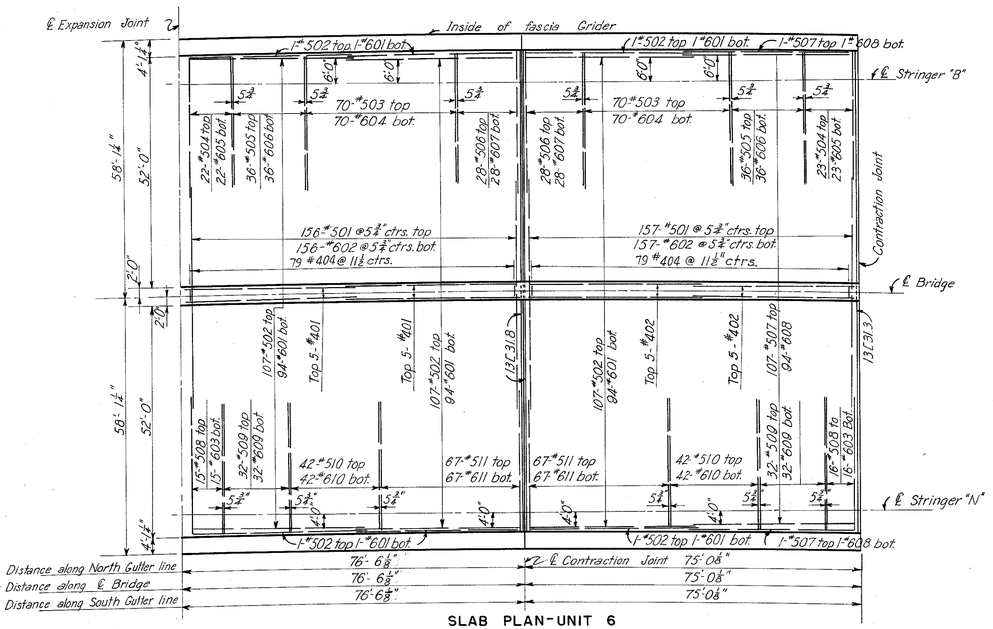
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

117
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



SLAB PLAN — UNIT 5



SLAB PLAN-UNIT 6

Notes:

All longitudinal bars are to be parallel to stringers except the bars at the edges of slab which are parallel to gutter lines. For spacing of longitudinal bars, see Typical Section, Sheet 114.

All transverse bars are to be normal to stringers and at 5¾" ctrs. except extra bars parallel to edge of joints and cross drains. Top transverse bars are to be spliced at mid-point between Stringers "E" and "F" and Stringers "J" and "K". Bottom transverse bars are to be spliced over Stringer "E" and Stringer "K".

For Details of Contraction Joint, see Sheet 114.

For Reinforcing Steel Schedule, see Sheets 120 and 121
For Details of Cross Drain, see Sheets 105, 107 and 109

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5
SLAB PLAN
UNITS 5 AND 6
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/8" = 1'-0"
MADE R.R.C. DATE 2-18-54
TRCD H.L.D. DATE 8-25-54
CKD O.E.R. DATE 9-10-54

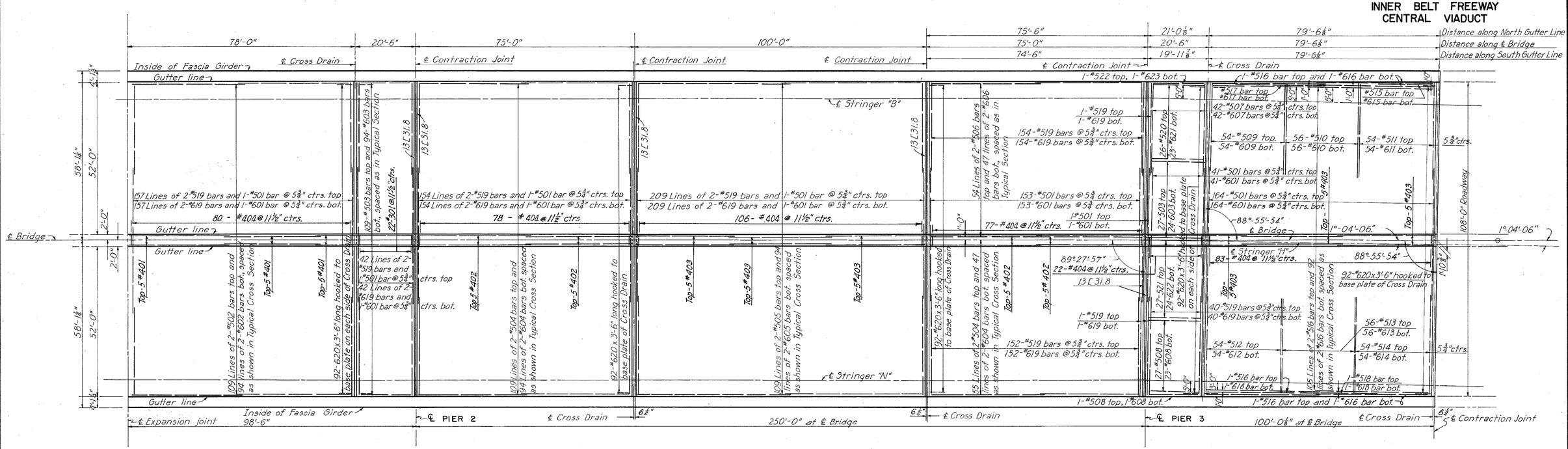
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.117

227 & 228

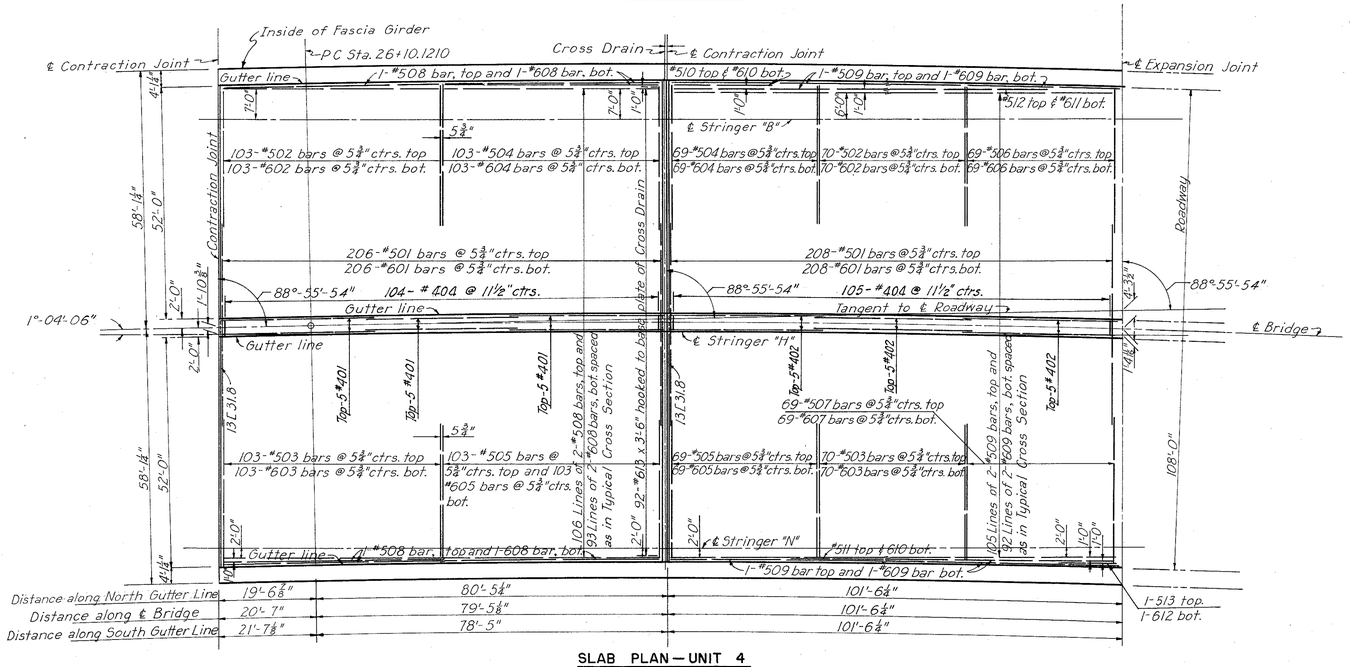
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

116
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



SLAB PLAN—UNIT 3



SLAB PLAN—UNIT 4

Notes: All longitudinal bars are to be parallel to stringers except the bars at the edges of slab which are parallel to gutter lines. For spacing of longitudinal bars, see Typical Section, Sheet 114.

All transverse bars are to be normal to stingers and at 5¾" ctrs. except extra bars parallel to edges of joints and cross drains. Top traverse bars are to be spliced at mid-point between Stringers "E" and "F", and Stringers "J" and "K". Bottom transverse bars are to be spliced over Stringer "E" and Stringer "K".

For Contraction Joint Detail, see Sheet 114

For Cross Drain Details, see Sheets 105, 107 and 109

For Reinforcement Schedule, see Sheet 120

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5
SLAB PLAN
UNITS 3 AND 4
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ⅛" = 1'-0"
MADE WBC DATE 1-29-54
TRCD. JAV DATE 8-24-54
CKD. K.G.R. D.E.R. DATE 9-10-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

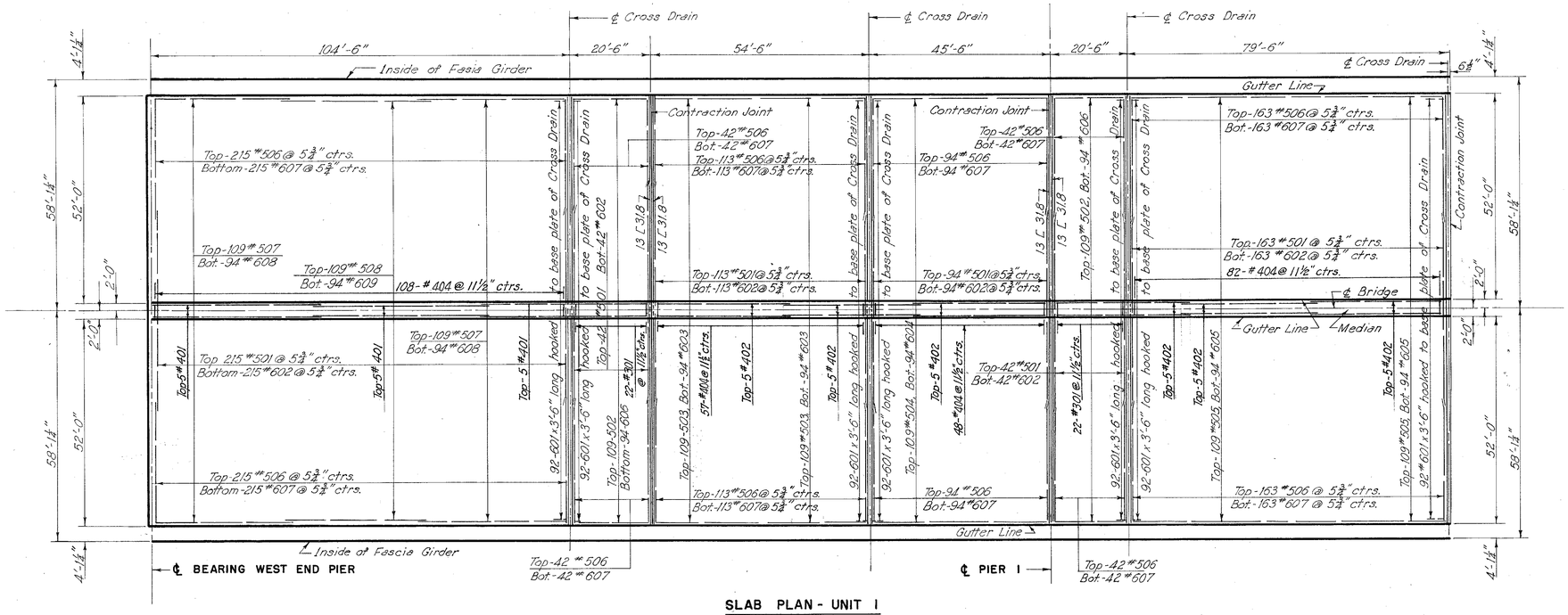
914-1A SHEET- 2.116

225 4226

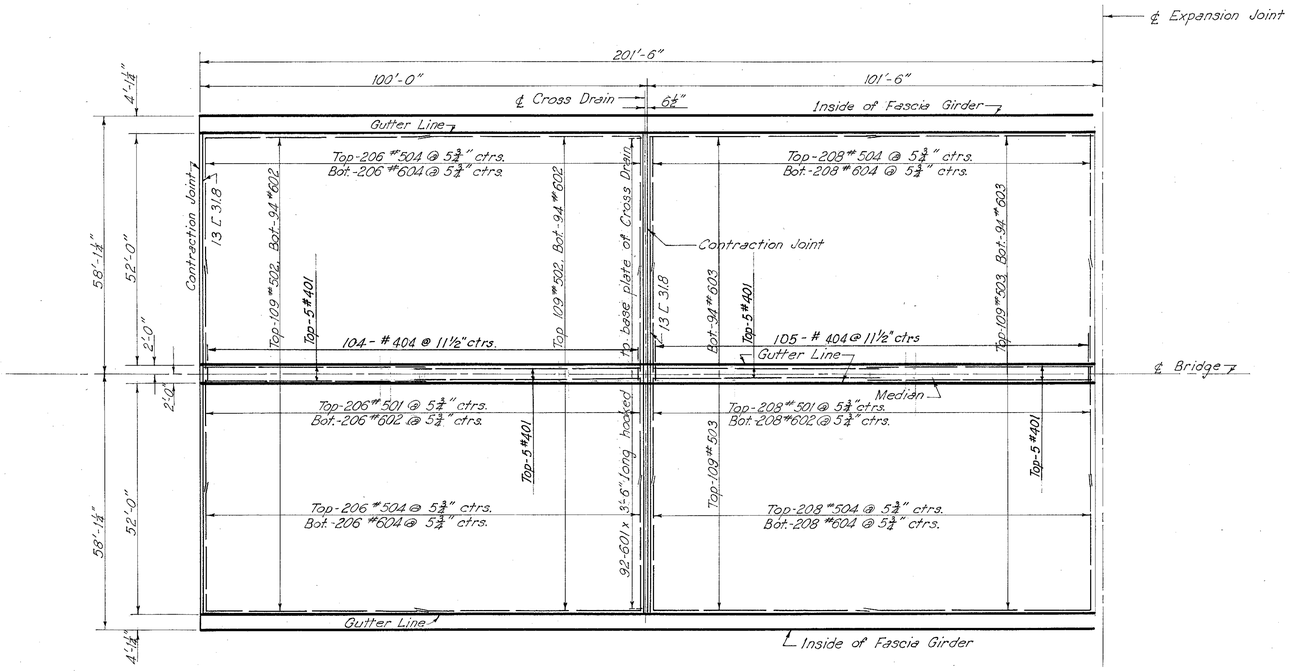
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

115
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



SLAB PLAN - UNIT I



SLAB PLAN - UNIT 2

Note:
All longitudinal bars are to be parallel to stringers except bars at edges of curved portion of slab which are parallel to gutter line. For spacing of longitudinal bars, see Typical Section Sheet 114.

All transverse bars are to be normal to ℄ Bridge and at 5¾" ctrs. Top transverse bars are to be spliced at mid-point between Stringers "E" and "F" and Stringers "J" and "K". Bottom transverse bars are to be spliced over Stringer "E" and Stringer "K"

For Contraction Joint Detail, see Sheet 114
For Cross Drain Details, see Sheets 105, 107 and 109.
For Reinforcement Schedule, see Sheet 120.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5
SLAB PLAN
UNITS 1 AND 2
CLEVELAND CUYAHOGA COUNTY OHIO

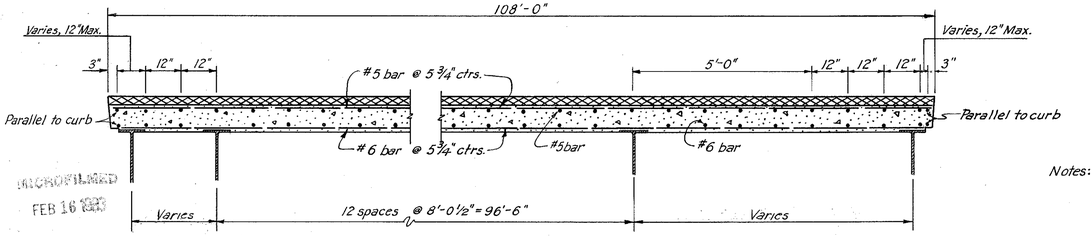
SCALE ⅜" = 1'-0"
MADE R.K. DATE 1-22-54
TRCD. GMO DATE 8-19-54
CKD. DFE DATE 9-9-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.115

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

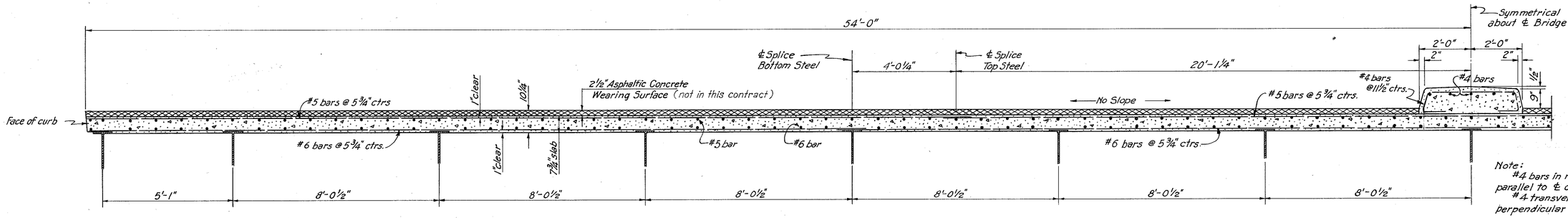
114
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



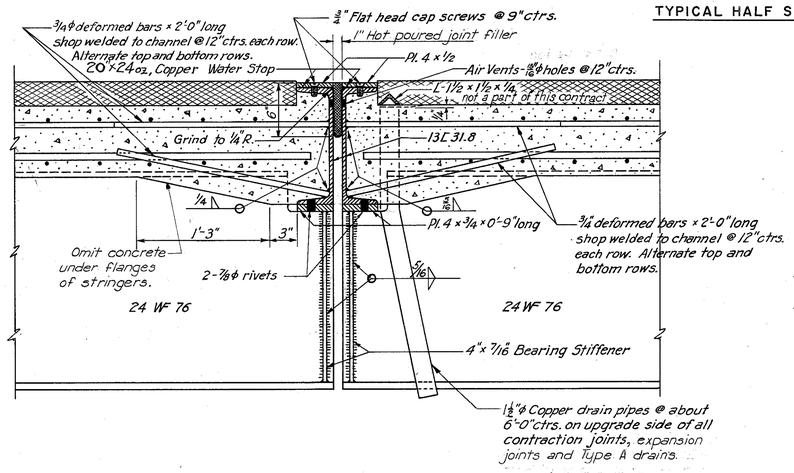
TYPICAL SECTION - STA. 24+89.52 TO STA. 40+83.22
Scale ½" = 1'-0"

Notes: Longitudinal bars are to be parallel to stringers except bars adjacent to curb as noted.
Top longitudinal bars - #5 bars spaced as shown.
Bottom longitudinal bars - #6 bars spaced as shown.
Transverse bars are to be normal to stringers.
Top transverse bars - #5 bars @ 5¾" ctrs.
Bottom transverse bars - #6 bars @ 5¾" ctrs.

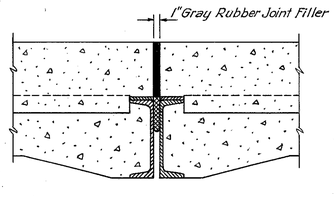


Note:
#4 bars in median to be parallel to ℄ of Roadway.
#4 transverse bars to be perpendicular to ℄ of Roadway.

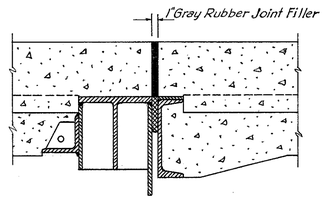
TYPICAL HALF SECTION - STA. 16+13.02 TO STA. 24+89.52 AND STA. 40+83.22 TO STA. 43+34.72
Scale ½" = 1'-0"



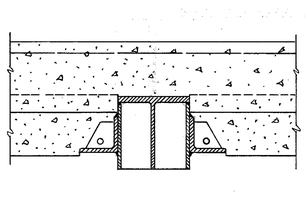
CONTRACTION JOINT DETAILS
Scale 1½" = 1'-0"
For locations see Sh. 103



AT CONTRACTION JOINT

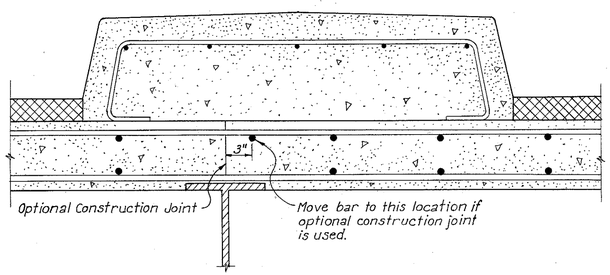


AT TYPE B DRAINS

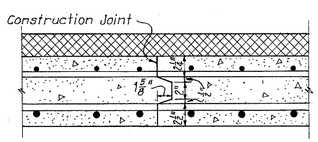


AT TYPE A DRAINS

MEDIAN JOINTS
Scale 1" = 1'-0"



OPTIONAL LONGITUDINAL CONSTRUCTION JOINT
Scale: 1½" = 1'-0"



TRANSVERSE CONSTRUCTION JOINT
Scale: 1½" = 1'-0"

For slab pouring sequence see Sh. 103

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5

TYPICAL SLAB SECTIONS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE R.K. DATE 2-12-54
TRCD. H.S.S. DATE 10-1-54
CKD. D.F.R. DATE 10-1-54

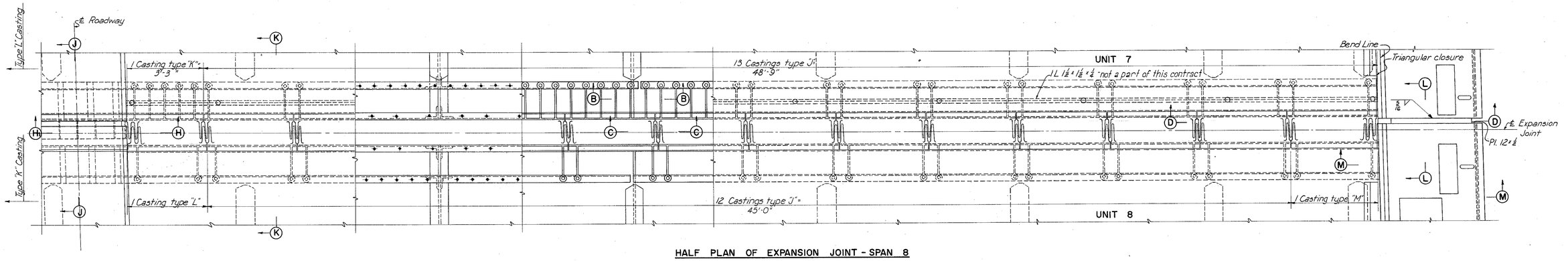
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.114

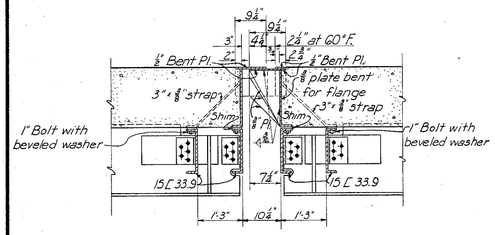
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

113
122

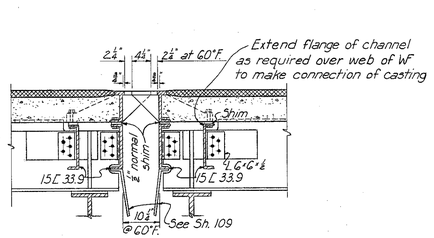
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



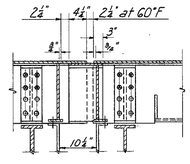
HALF PLAN OF EXPANSION JOINT - SPAN 8



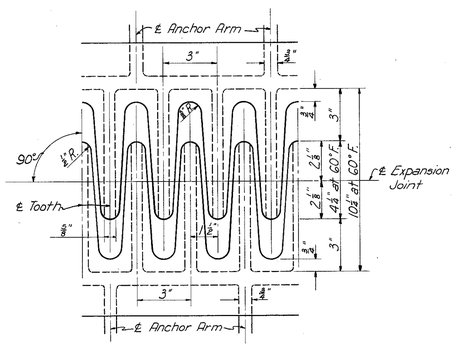
SECTION J-J



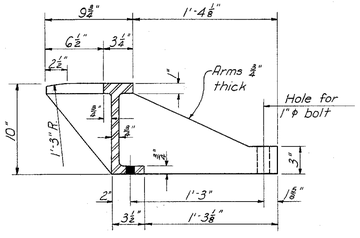
SECTION K-K



SECTION L-L



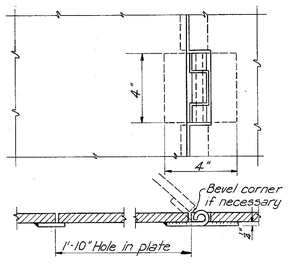
TYPICAL PLAN EXPANSION JOINT - SPAN 8
Scale: 3"=1'-0"



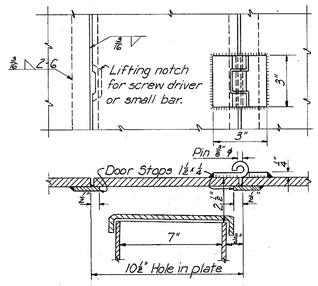
CROSS SECTION OF JOINT CASTING
Scale: 1½"=1'-0"

Dimensions of Span 8 castings are the same as for corresponding casting on Sh. 110 or 111 except as otherwise shown above.
For casting J, see casting A, 50 required.
For casting K, see casting B, 2 required.
For casting L, see casting C, 2 required.
For casting M, see casting D, 2 required.

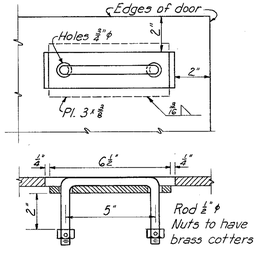
Notes:
For Section H-H see Sh. 112.
For Sections B-B, C-C and D-D, see Sh. 111.
For other notes, see Sh. 111.



DOOR TO CATWALK
Scale: 3"=1'-0"

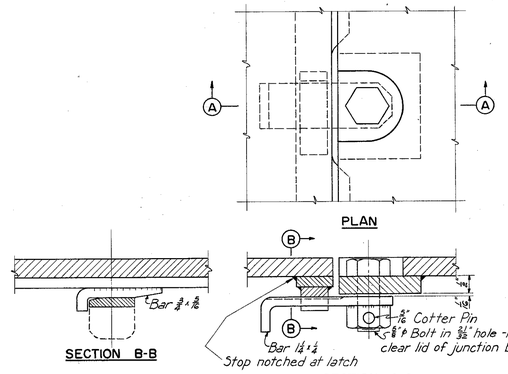


DOOR TO JUNCTION BOX
Scale: 3"=1'-0"



LIFTING HANDLE
Scale: 3"=1'-0"
For doors to catwalk

ACCESS DOOR DETAILS



LATCH FOR ACCESS DOORS
Scale: Half Size

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

EXPANSION JOINT - SPAN 8

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3"=1'-0" except as noted
MADE J.M.S. DATE 2-10-54
TRCD. N.A.M. DATE 11-3-54
CKD. O.M.D. DATE 11-3-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

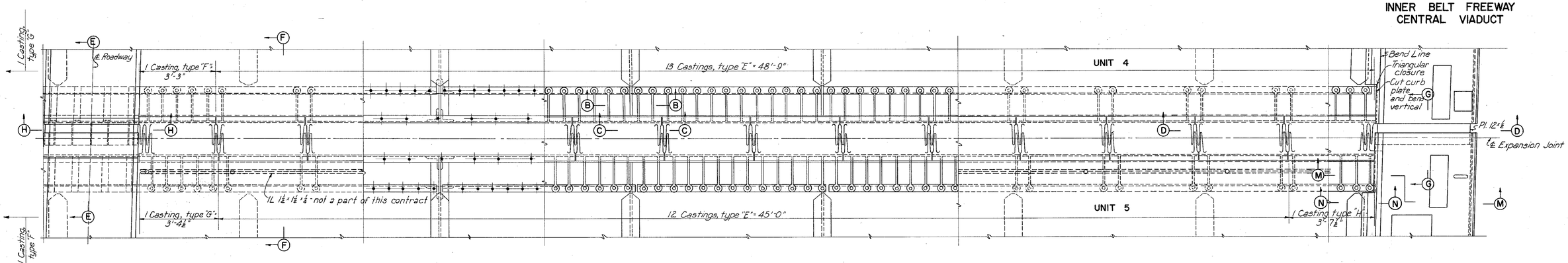
914-1A SHEET- 2.113

235

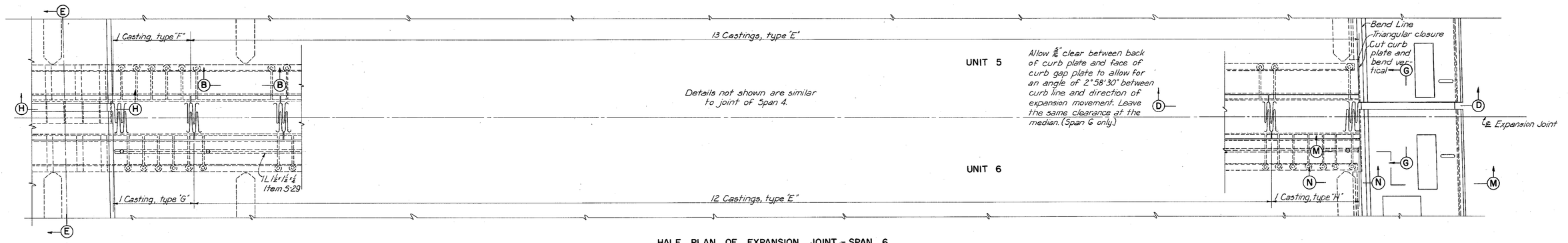
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

112
122

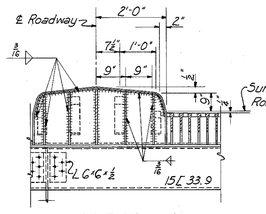
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



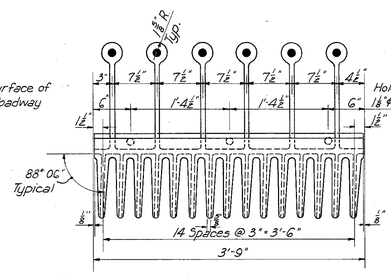
HALF PLAN OF EXPANSION JOINT - SPAN 4



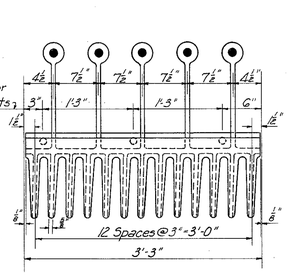
HALF PLAN OF EXPANSION JOINT - SPAN 6



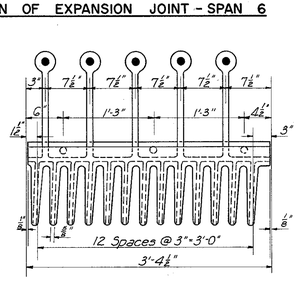
SECTION H-H



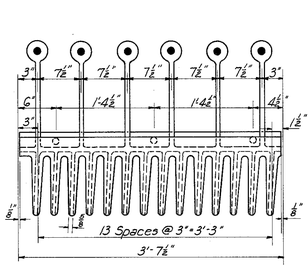
CASTING E
Scale: 1"=1'-0"
No. Required - 100



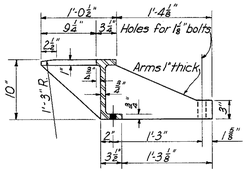
CASTING F
Scale: 1"=1'-0"
No. Required - 4



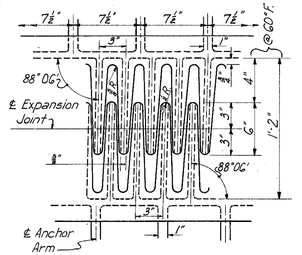
CASTING G
Scale: 1"=1'-0"
No. Required - 4



CASTING H
Scale: 1"=1'-0"
No. Required - 4



CROSS SECTION OF JOINT CASTING
Scale: 1"=1'-0"



TYPICAL PLAN EXPANSION JOINT SPANS 4 & 6
Scale: 1½"=1'-0"

Notes:
Sections B-B, C-C, D-D, E-E, F-F, M-M, N-N, and G-G are shown on Sh. 111.
For notes on expansion joints, see Sh. 111.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
EXPANSION JOINT — SPANS 4 AND 6
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½"=1'-0" except as noted
MADE J.M.S. DATE 2-8-54
TRCD. M.A.M. DATE 11-9-54
CKD. D.M.D. DATE 11-10-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.112

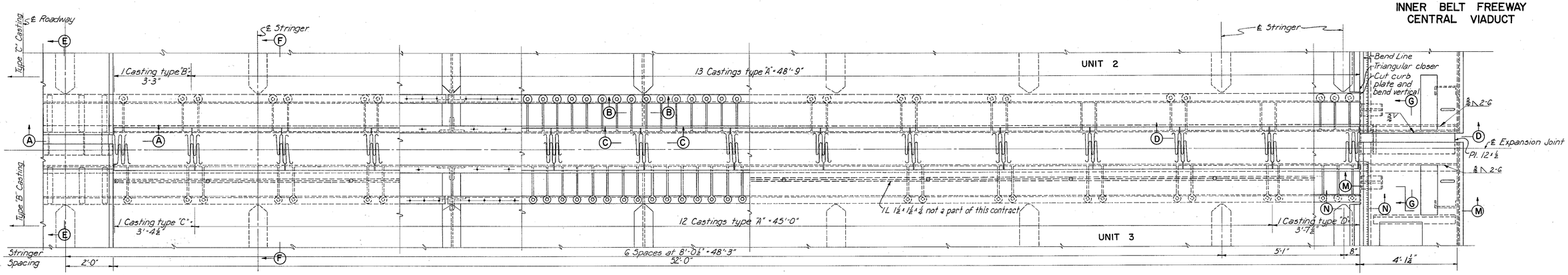
234

MICROFILMED
FEB 16 1955

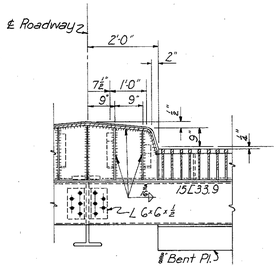
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

111
122

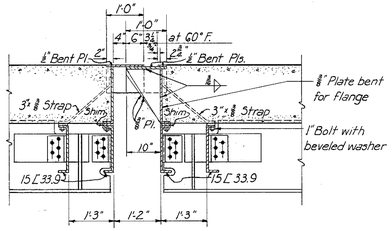
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



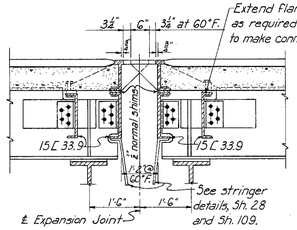
HALF PLAN OF EXPANSION JOINT SPAN 2



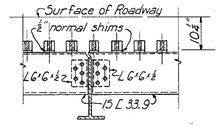
SECTION A-A



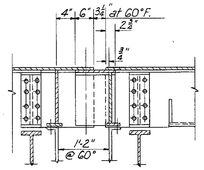
SECTION E-E



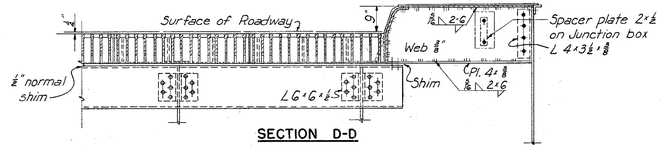
SECTION F-F



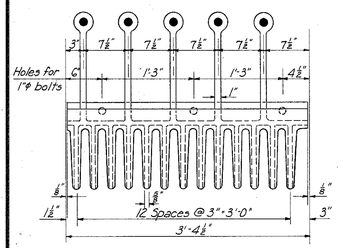
SECTION B-B



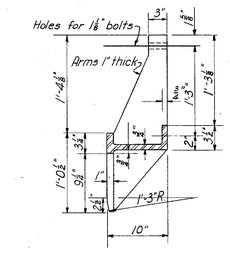
SECTION G-G



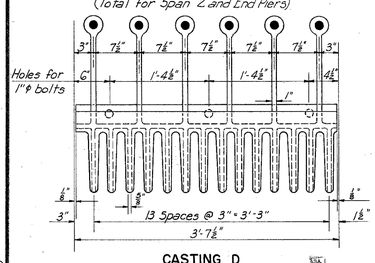
SECTION D-D



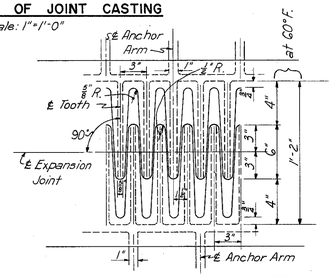
CASTING C
Scale: 1" = 1'-0" No. Required - 4
(Total for Span 2 and End Piers)



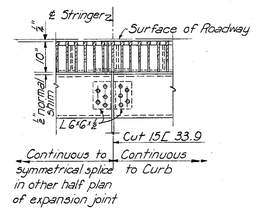
CROSS SECTION OF JOINT CASTING
Scale: 1" = 1'-0"



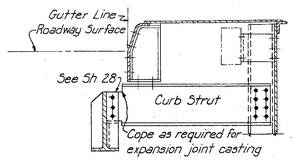
CASTING D
Scale: 1" = 1'-0" No. Required - 4



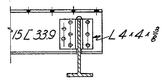
TYPICAL PLAN EXPANSION JOINT SPAN 2
Scale: 1½" = 1'-0"



SECTION C-C



SECTION M-M



SECTION N-N

Notes:
All castings shall be cast steel, conforming to Sec. M-7.7 of the specifications.
Bolt holes in castings shall be drilled or reamed.
All fillets in castings shall have ½" radius unless shown otherwise.
Top of expansion casting shall be set ¼" below roadway grade elevations and conform to cross sections of slab.
For stringer and floor beam spacing, see framing plans.
For drainage trough details, see 5h. 109.
For sidewalk details, see 5h. 100.
For details of castings "A" and "B", see 5h. 110.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

EXPANSION JOINT SPAN 2

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½" = 1'-0" except as noted
MADE J.M.S. DATE 1-27-54
TRCD. N.A.M. DATE 10-28-54
CKD. O.M.D. DATE 10-29-54
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.111

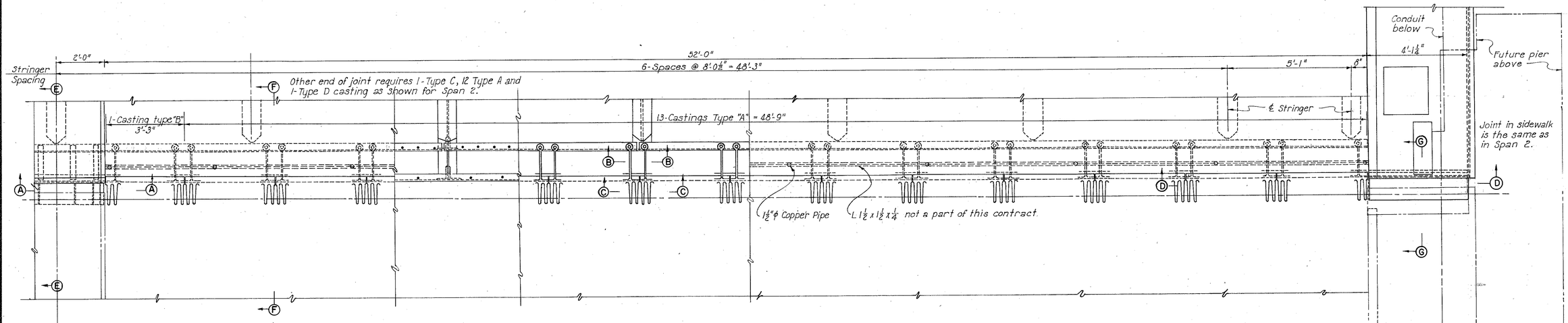
233

10-18-58 Revised As-Built JEP

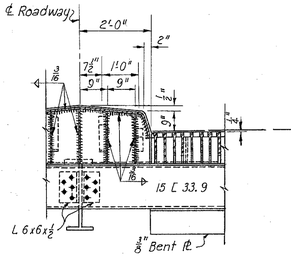
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

110
122

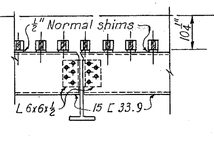
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



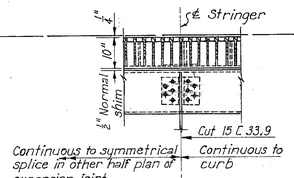
HALF PLAN OF EXPANSION JOINT AT EAST AND WEST END PIERS
Scale: ½" = 1'-0"
For west pier looking east ; for east pier looking west.



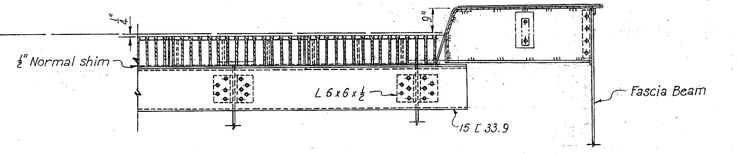
SECTION A-A
Scale : ½" = 1'-0"



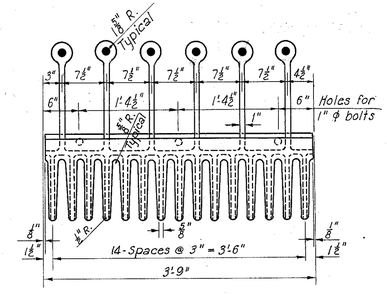
SECTION B-B
Scale : ½" = 1'-0"



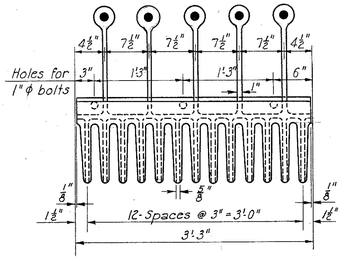
SECTION C-C
Scale : ½" = 1'-0"



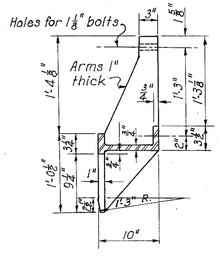
SECTION D-D



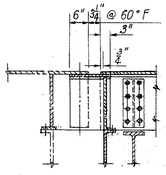
CASTING A
Scale : 1" = 1'-0"
No required 150 for Span 2 and both end piers.



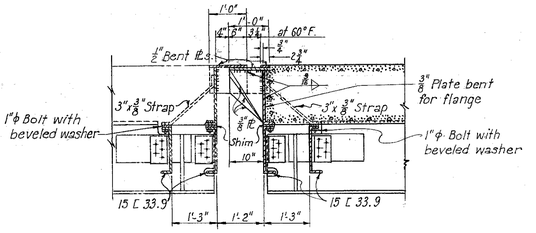
CASTING B
Scale : 1" = 1'-0"
No. required 4 for Span 2 and both end piers.



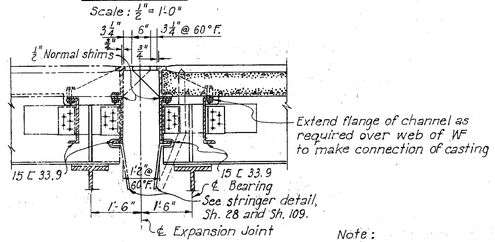
CROSS SECTION OF JOINT CASTING
Scale: 1" = 1'-0"



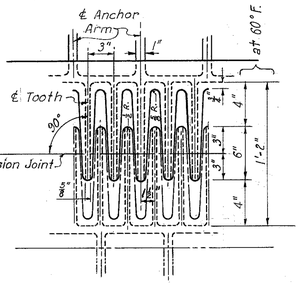
SECTION G-G
Scale: ½" = 1'-0"



SECTION E-E
Scale : ½" = 1'-0"



SECTION F-F
Scale : ½" = 1'-0"



TYPICAL PLAN EXPANSION JOINT EAST AND WEST END PIERS
Scale : 1½" = 1'-0"

Note:
For notes on expansion joints see Sheet 111.
For details of castings C and D see Sheet 111.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
EXPANSION JOINT AT EAST AND WEST END PIERS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE D.E.R. DATE 8-16-54
TRCD D.E.R.&K. DATE 10-27-54
CKD. D.H.D DATE 10-28-54

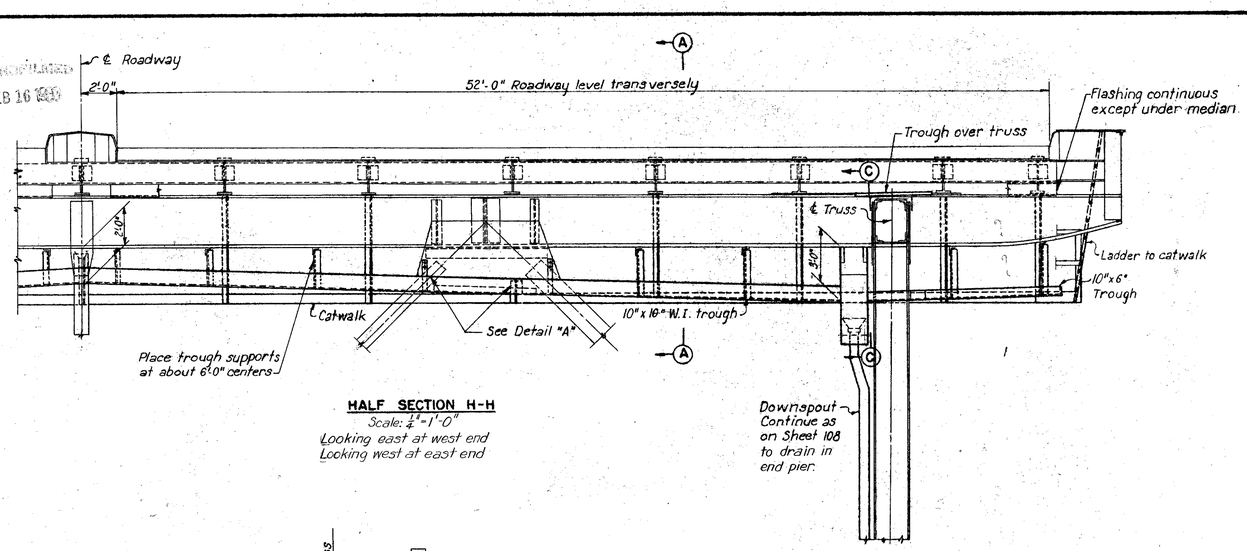
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.110

10-18-58 Revised As-Built JEP

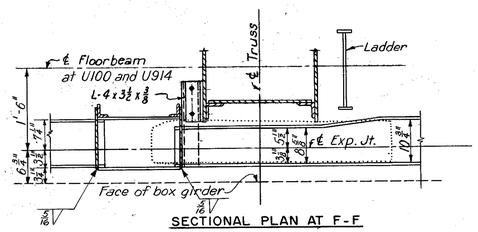
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

109A
122

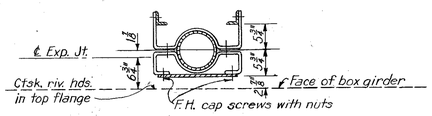
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



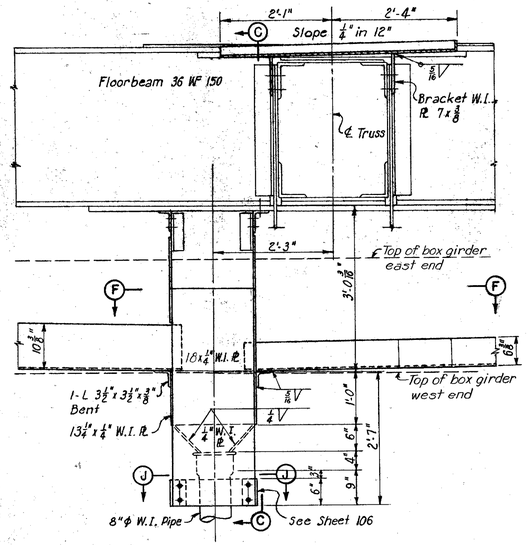
HALF SECTION H-H
Scale: $\frac{1}{4}$"=1'-0"
Looking east at west end
Looking west at east end



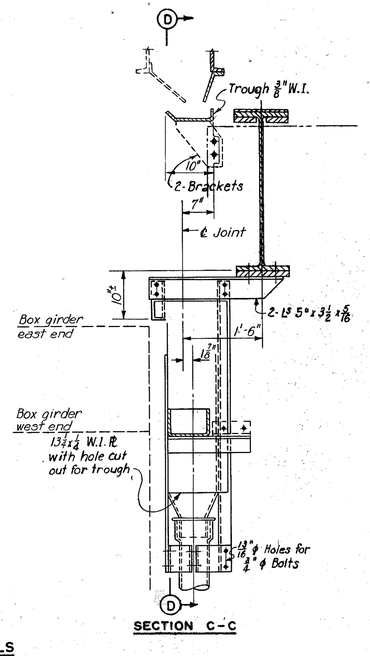
SECTIONAL PLAN AT F-F



SECTION J-J

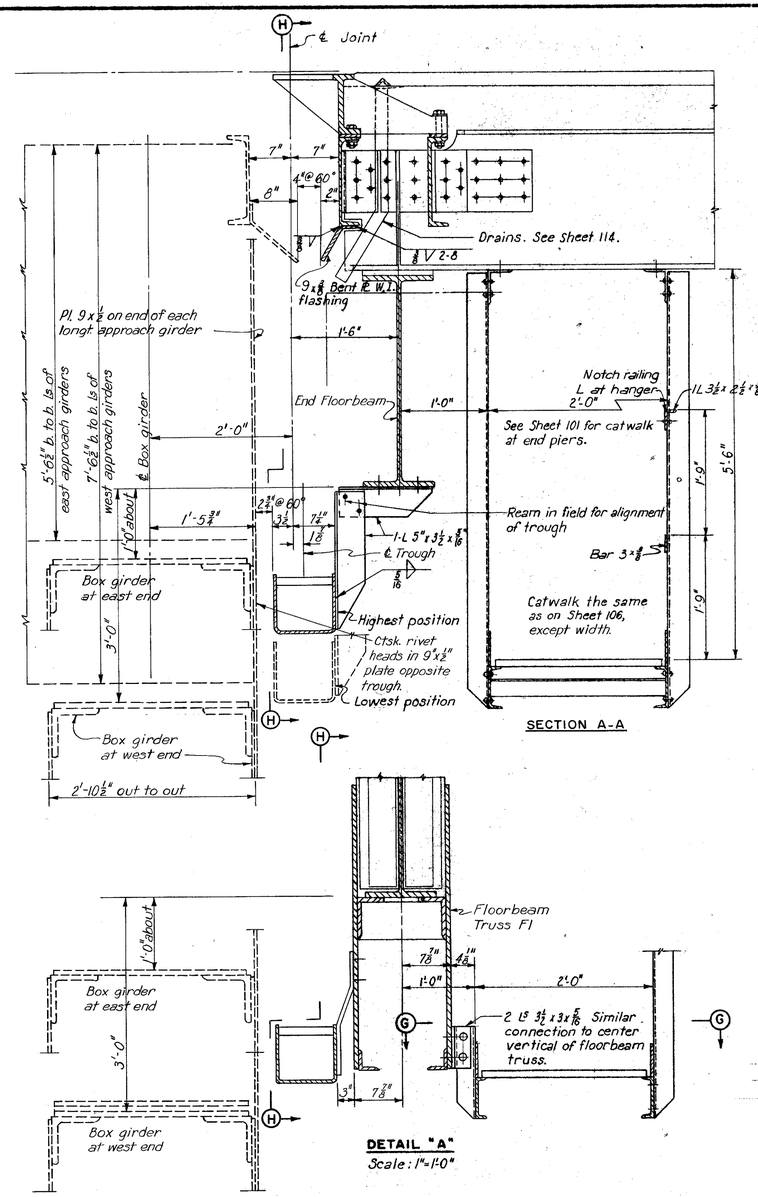


SECTION D-D



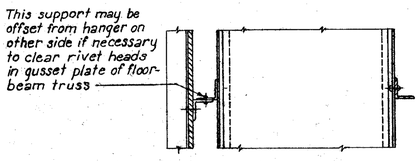
SECTION C-C

HOPPER DETAILS
Scale: $\frac{3}{4}$"=1'-0"



SECTION A-A

DETAIL "A"
Scale: 1"=1'-0"



SECTION G-G
Scale: 1"=1'-0"

This drawing supplements details shown on drawing No. 109.
8-13-56 RUN

Note:
Details not shown are the same as for Type C Sh. 109.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CUY-42 R-17.50
ROADWAY DRAINS AND CATWALK AT END PIERS
CLEVELAND CUYAHOGA COUNTY OHIO

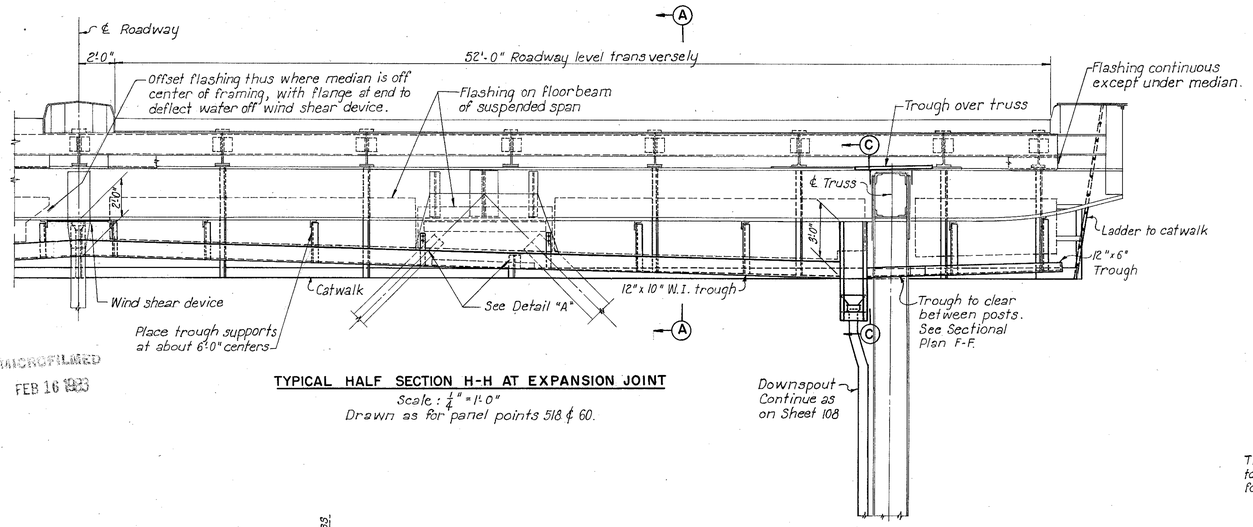
SCALE As shown
MADE DMD DATE 8-2-56
TRCD GJK DATE 8-6-56
CKD ____ DATE ____

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.109A

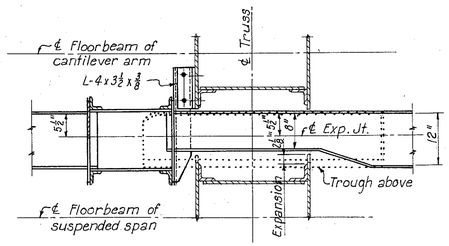
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

109
122

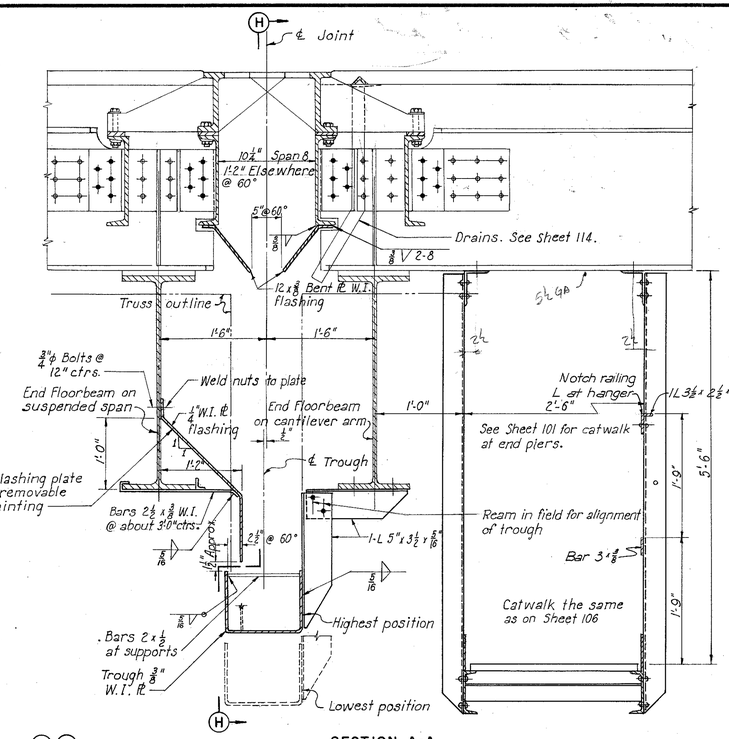
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



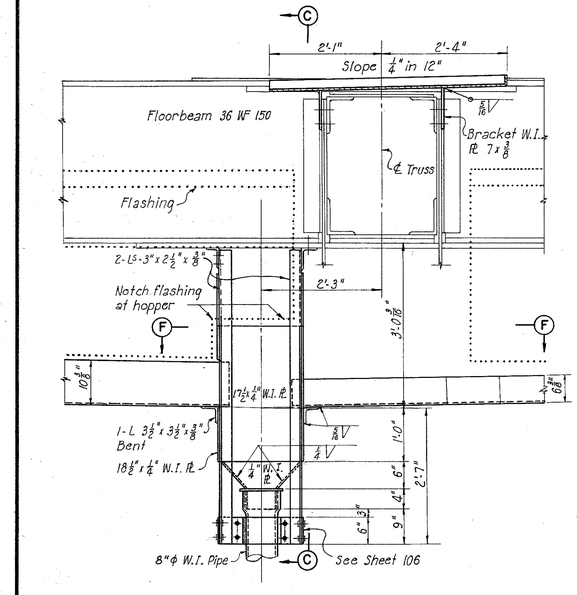
TYPICAL HALF SECTION H-H AT EXPANSION JOINT
Scale: 1/4" = 1'-0"
Drawn as for panel points 5L8 ℄ 60.



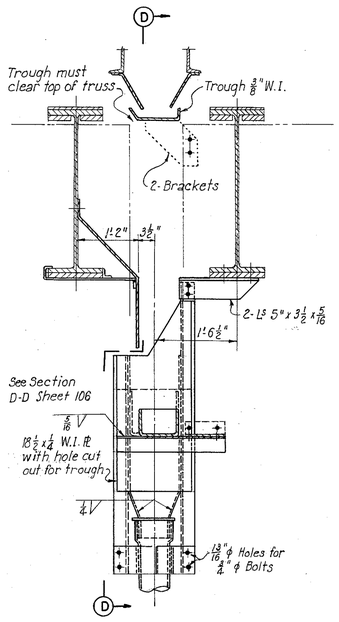
SECTIONAL PLAN AT F-F



SECTION A-A
Scale: 1"=1'-0"

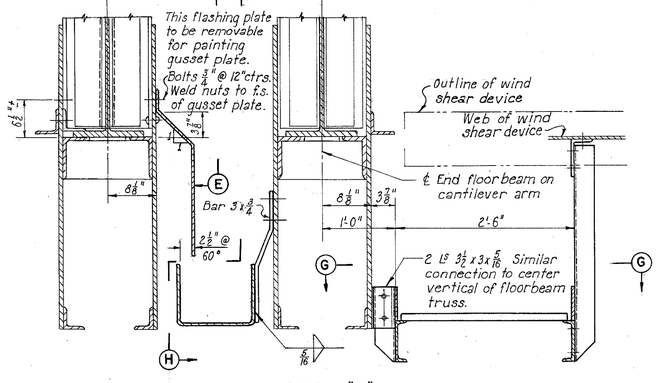


SECTION D-D

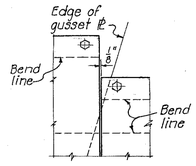


SECTION C-C

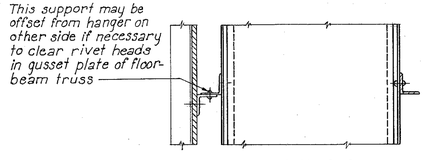
HOPPER DETAILS
Scale: ¾" = 1'-0"



DETAIL "A"
Scale: 1"=1'-0"



VIEW E-E



SECTION G-G
Scale: 1"=1'-0"

Note:
For construction at end piers this contract includes expansion joint, flashing, trough and hoppers as shown here on cantilever arm.

Supplementary drawing No 1019 shows details of roadway drains and catwalk at end piers.
8-13-56 RWH

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17 5
ROADWAY DRAINS AND CATWALK
TYPE C
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE V.E.A. DATE 3-23-54
TRCD. A.H. DATE 11-30-54
CKD. D.M.D. DATE 12-3-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.109

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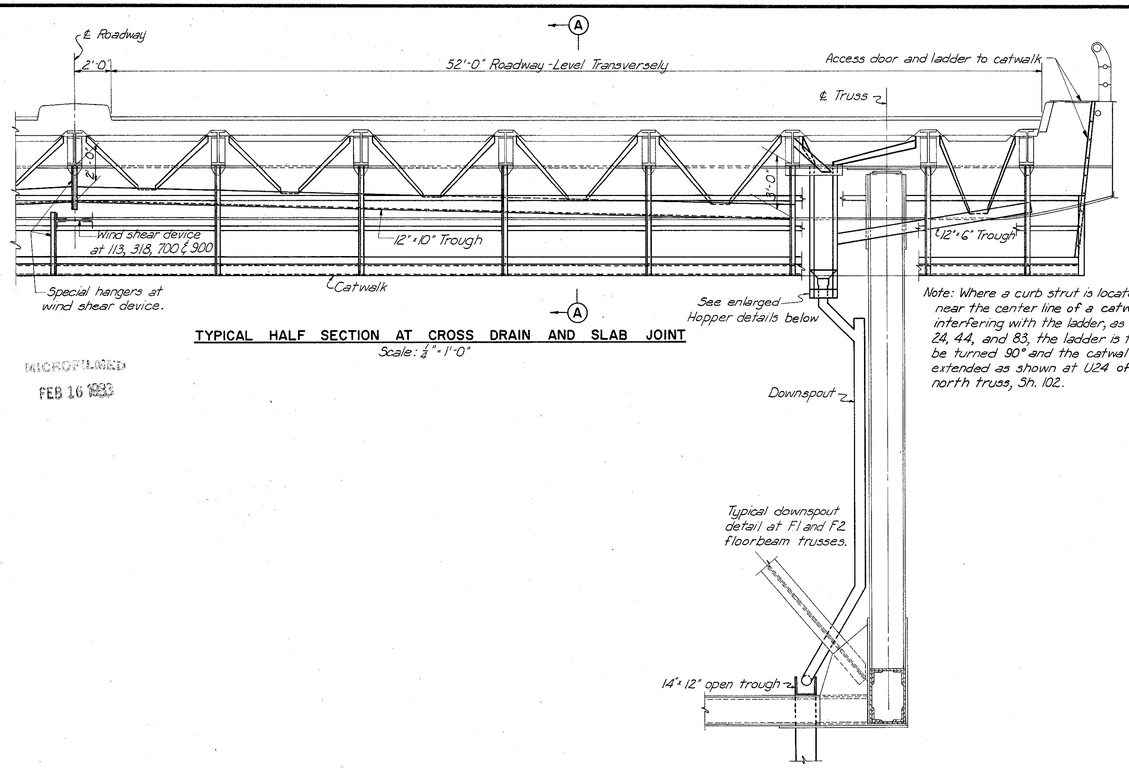
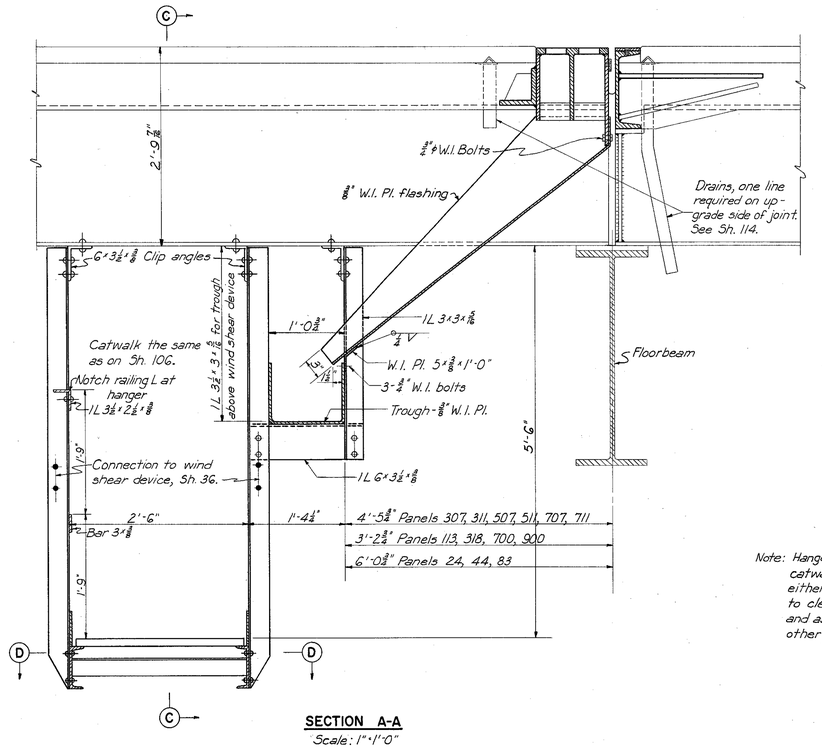


TYPICAL HALF SECTION AT CROSS DRAIN AND SLAB JOINT

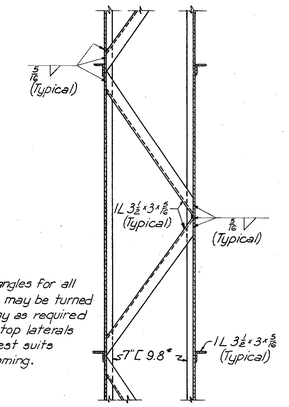
Scale: $\frac{1}{4}$" = 1'-0"

Note: Where a curb strut is located near the center line of a catwalk, interfering with the ladder, as at 24, 44, and 83, the ladder is to be turned 90° and the catwalk extended as shown at U24 of north truss, Sh. 102.



SECTION A-A

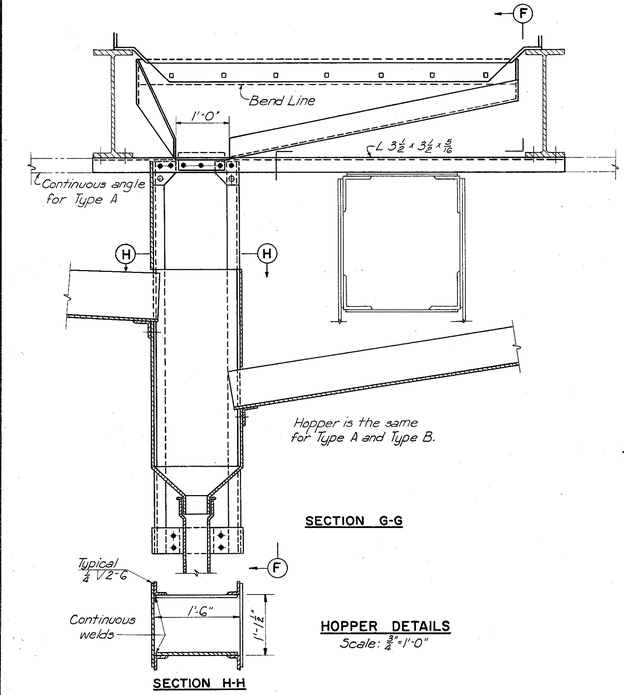
Scale: 1" = 1'-0"



Note: Hanger angles for all catwalks may be turned either way as required to clear top laterals and as best suits other framing.

SECTION D-D

Scale: $\frac{1}{2}$" = 1'-0"

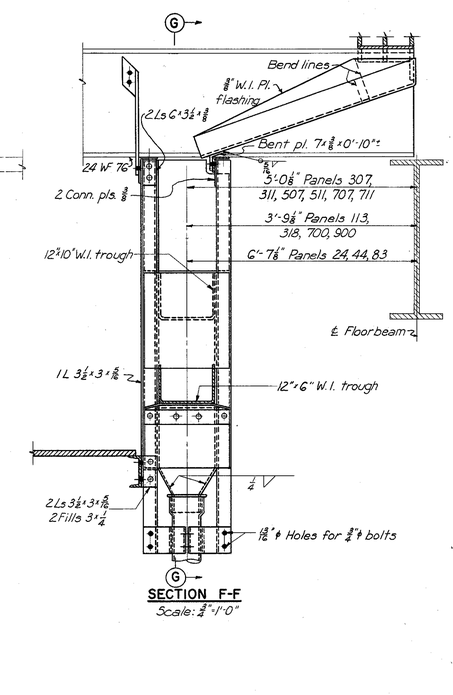


SECTION G-G

SECTION H-H

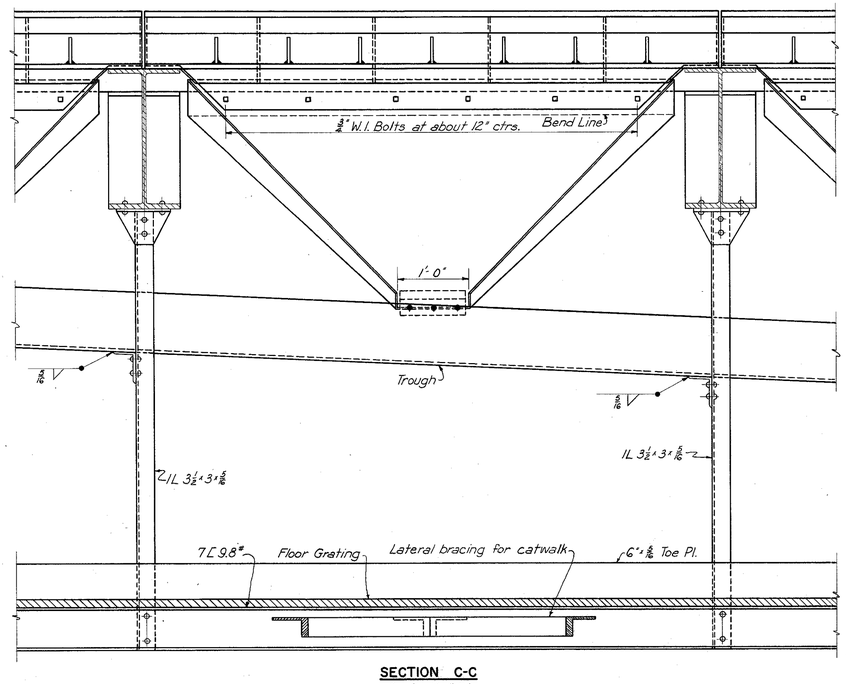
HOPPER DETAILS

Scale: ¾" = 1'-0"



SECTION F-F

Scale: ¾" = 1'-0"



SECTION C-C

Scale: 1" = 1'-0"

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

108
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5
ROADWAY DRAINS AND CATWALK
TYPE B

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE V. E. A. DATE 3-30-54
TRCD. N. A. M. DATE 11-30-54
CKD. D. M. D. DATE 12-1-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

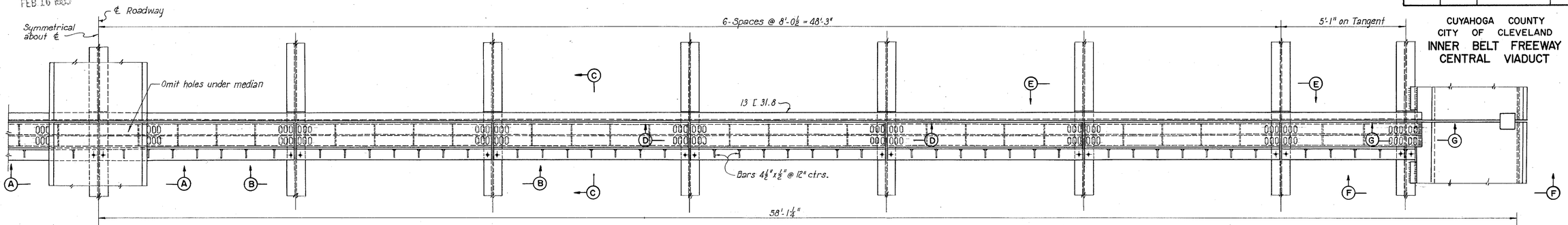
914-1A SHEET- 2.108

249

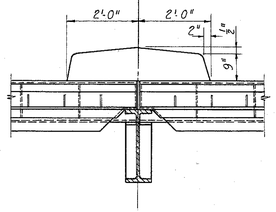
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

107
122

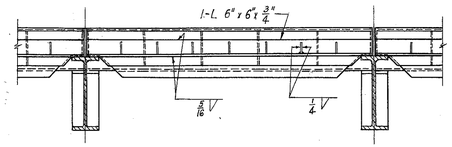
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



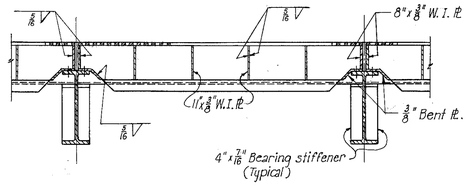
HALF PLAN OF CROSS DRAIN AND SLAB JOINT



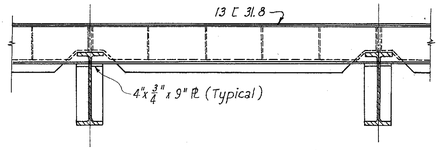
SECTION A-A



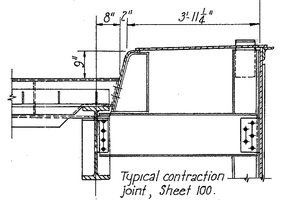
SECTION B-B



SECTION D-D



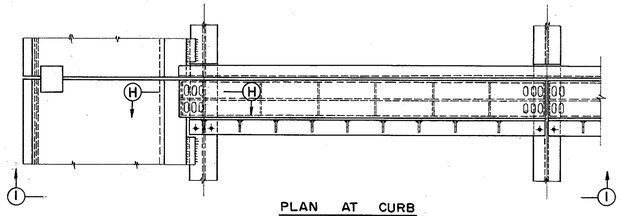
SECTION E-E



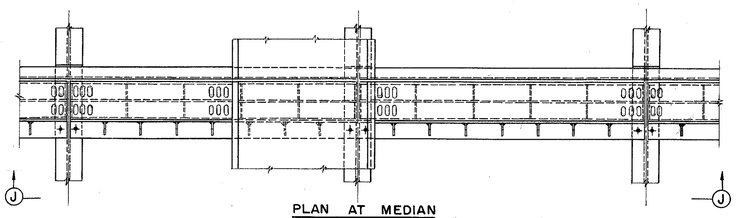
SECTION F-F

CROSS DRAIN AND SLAB JOINT WITH FRAMING CENTERED UNDER ROADWAY DECK

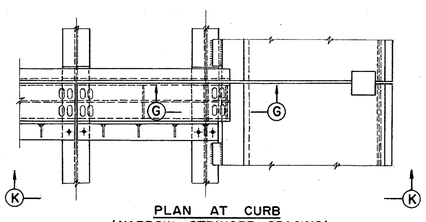
Panel Points 113, 24, 307, and 311.



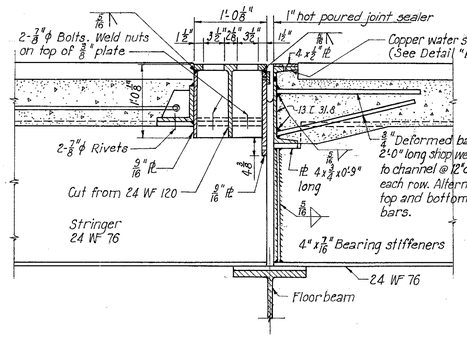
PLAN AT CURB
(WIDE STRINGER SPACING)



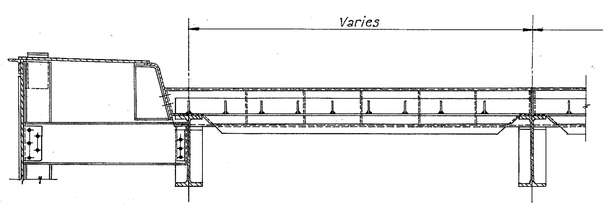
PLAN AT MEDIAN



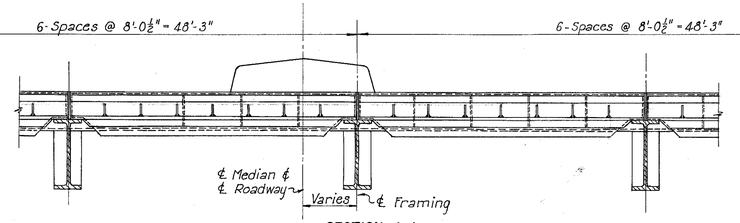
PLAN AT CURB
(NARROW STRINGER SPACING)



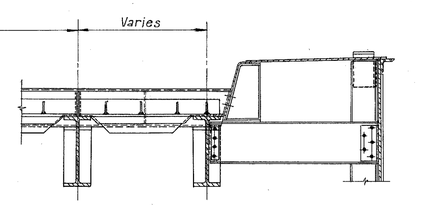
SECTION C-C
Scale: 1"=1'-0"



SECTION I-I



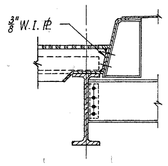
SECTION J-J



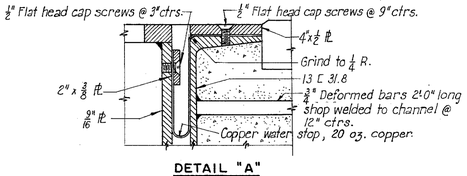
SECTION K-K

CROSS DRAIN AND SLAB JOINT WITH FRAMING NOT CENTERED UNDER ROADWAY DECK

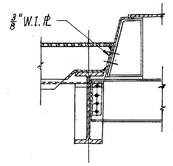
Panel Points 318, 44, 507, 511, 700, 707, 711, 83, and 900



SECTION H-H



DETAIL "A"
Scale: 3"=1'-0"



SECTION G-G

PART

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
ROADWAY DRAINS
TYPE B

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3"=1'-0" except as shown
MADE Y.C.A. DATE 3-10-54
TRCD. A.H. DATE 11-23-54
CKD. D.M.D. DATE 11-24-54

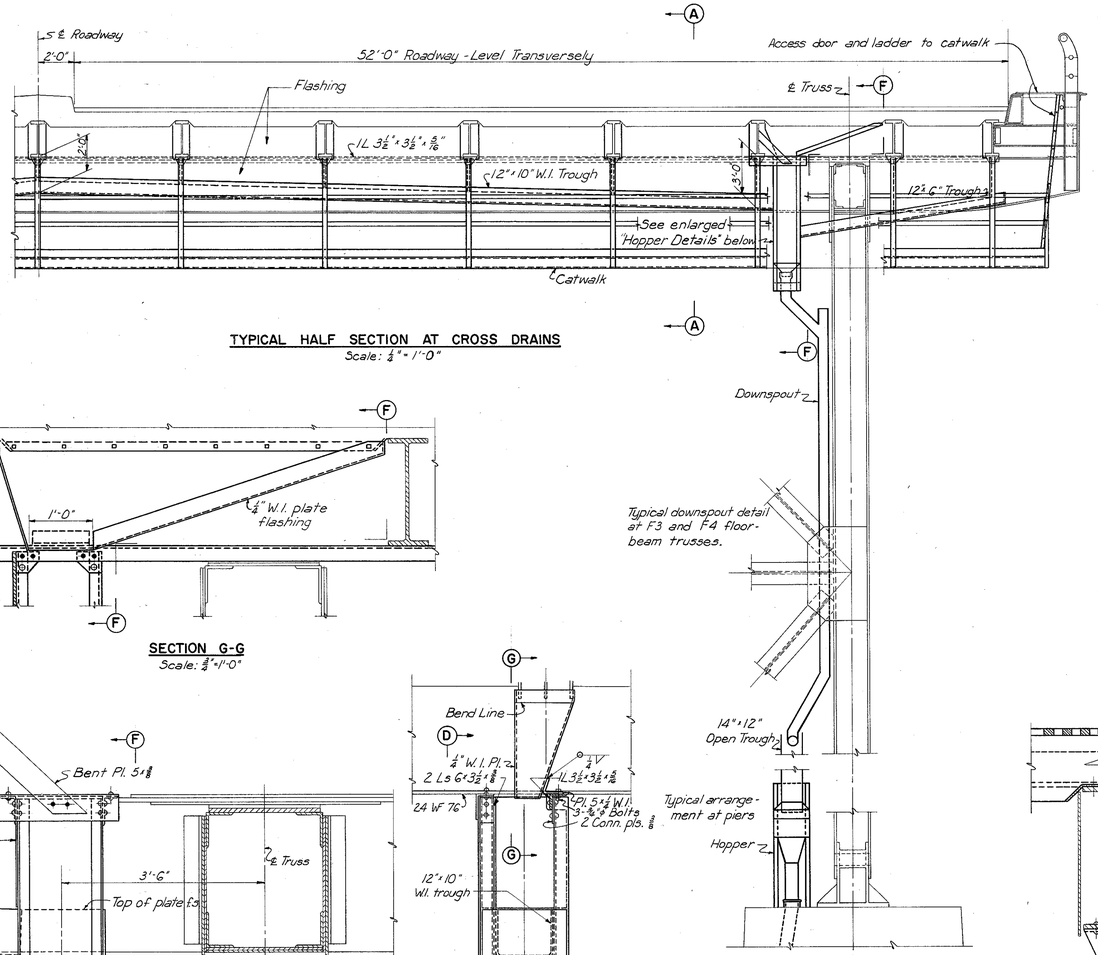
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.107

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

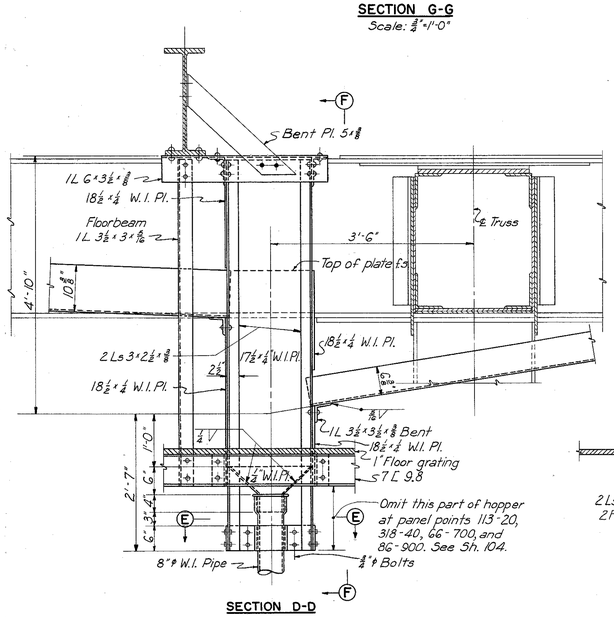
106
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



TYPICAL HALF SECTION AT CROSS DRAINS
Scale: ¼"=1'-0"

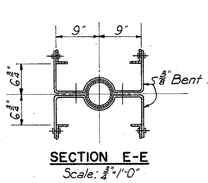
SECTION G-G
Scale: ⅜"=1'-0"



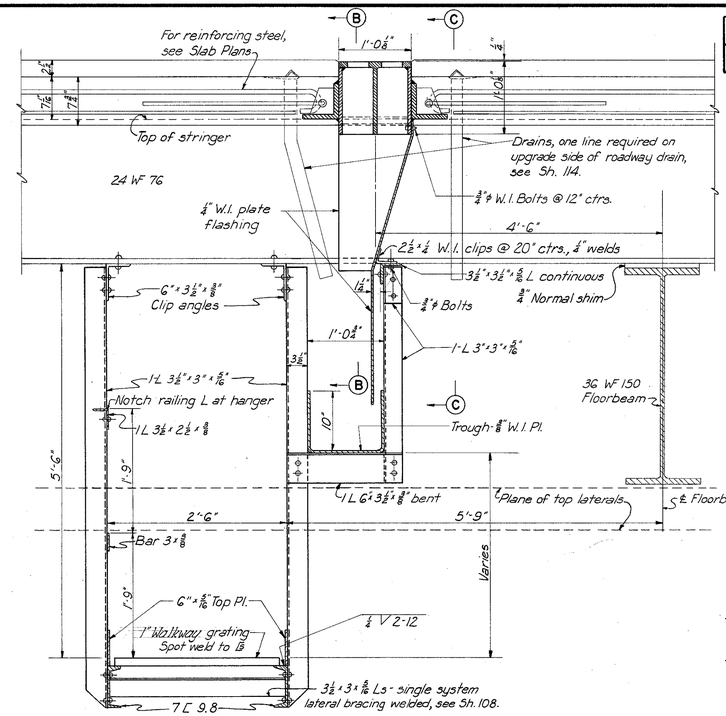
SECTION D-D

SECTION F-F

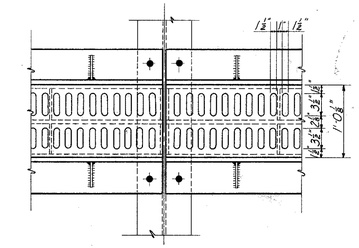
HOPPER DETAILS
Scale: ¾"=1'-0"



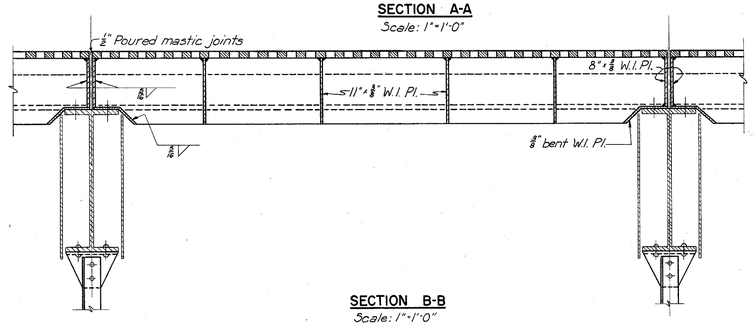
SECTION E-E
Scale: ¾"=1'-0"



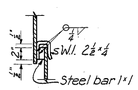
SECTION A-A
Scale: 1"=1'-0"



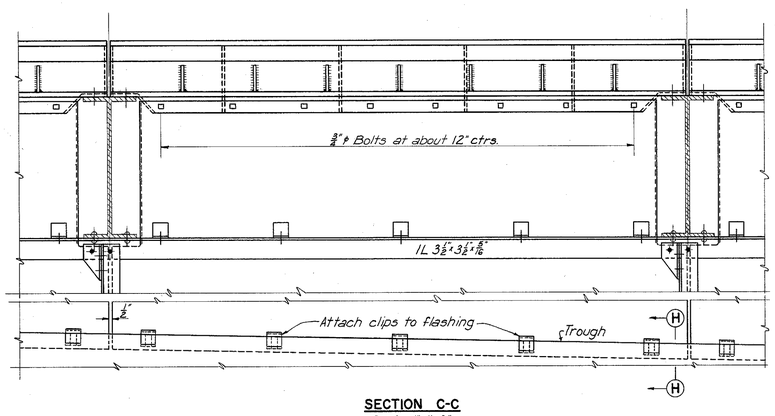
PLAN OF DRAIN
Scale: 1"=1'-0"



SECTION B-B
Scale: 1"=1'-0"



SECTION H-H
Scale: 1"=1'-0"



SECTION C-C
Scale: 1"=1'-0"

Note: Rivets in all framing for catwalks and drains to be ¾"ϕ except in connections to main members. All cross drain troughs and longitudinal troughs are of ⅜" wrought iron.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
ROADWAY DRAINS AND CATWALK
TYPE A

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE V.E.A. DATE 1-26-54
TRCD N.A.M. DATE 11-24-54
CKD. O.M.O. DATE 11-29-54

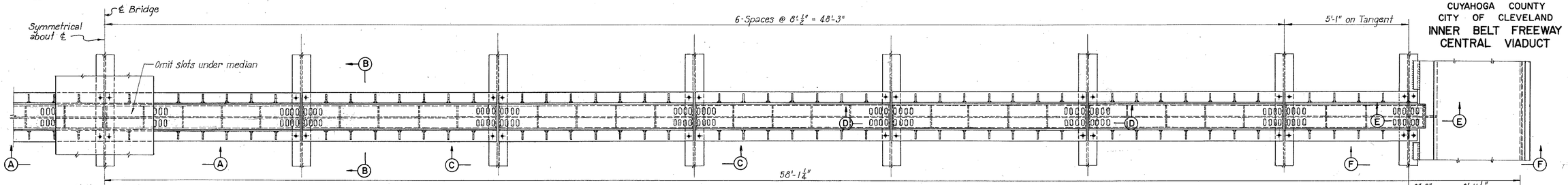
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.106

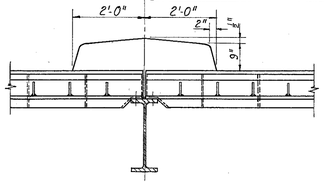
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

105
122

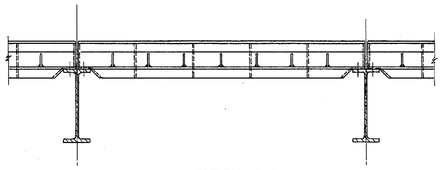
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



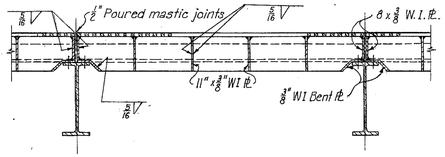
HALF PLAN OF CROSS DRAIN



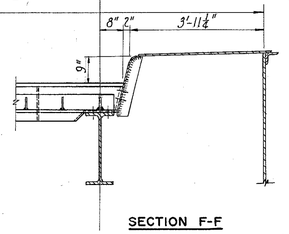
SECTION A-A



SECTION C-C



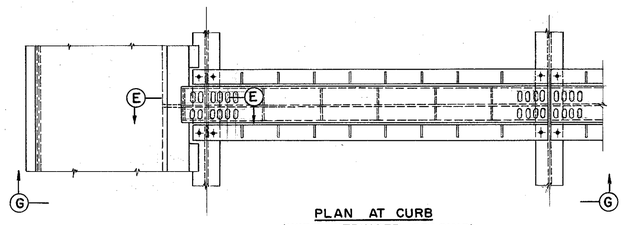
SECTION D-D



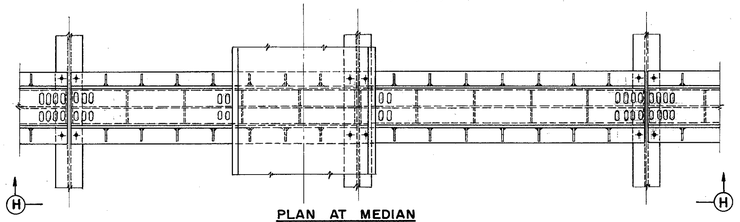
SECTION F-F

CROSS DRAIN WITH FRAMING CENTERED UNDER ROADWAY DECK

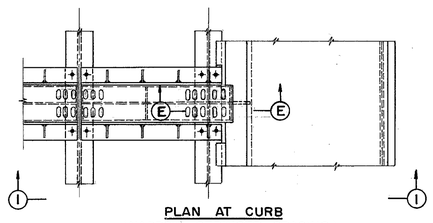
Panel Points 104, 107, 110, 303, 906 and 910



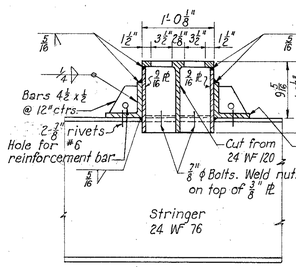
PLAN AT CURB
(WIDE STRINGER SPACING)



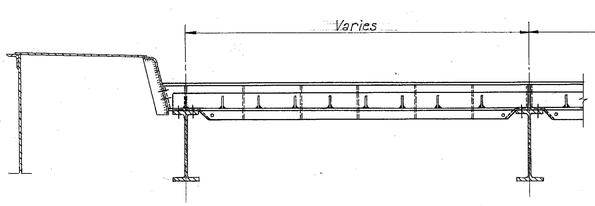
PLAN AT MEDIAN



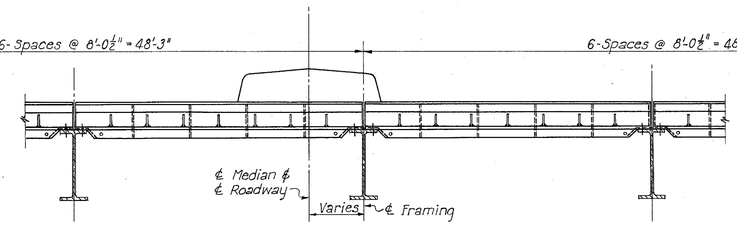
PLAN AT CURB
(NARROW STRINGER SPACING)



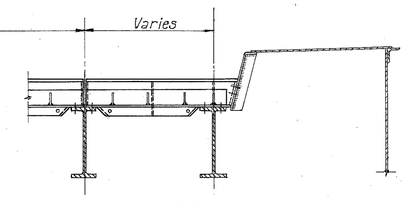
SECTION B-B
Scale : 1"=1'-0"



SECTION G-G



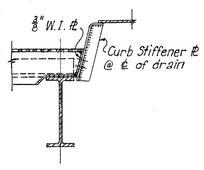
SECTION H-H



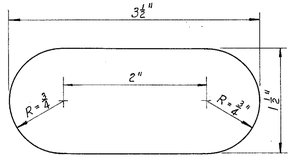
SECTION I-I

CROSS DRAIN WITH FRAMING NOT CENTERED UNDER ROADWAY DECK

Panel Points 315, 503, 515, 703, 715 and 903.



SECTION E-E



DETAIL OF DRAIN HOLE
Scale : Full Size

PART 3

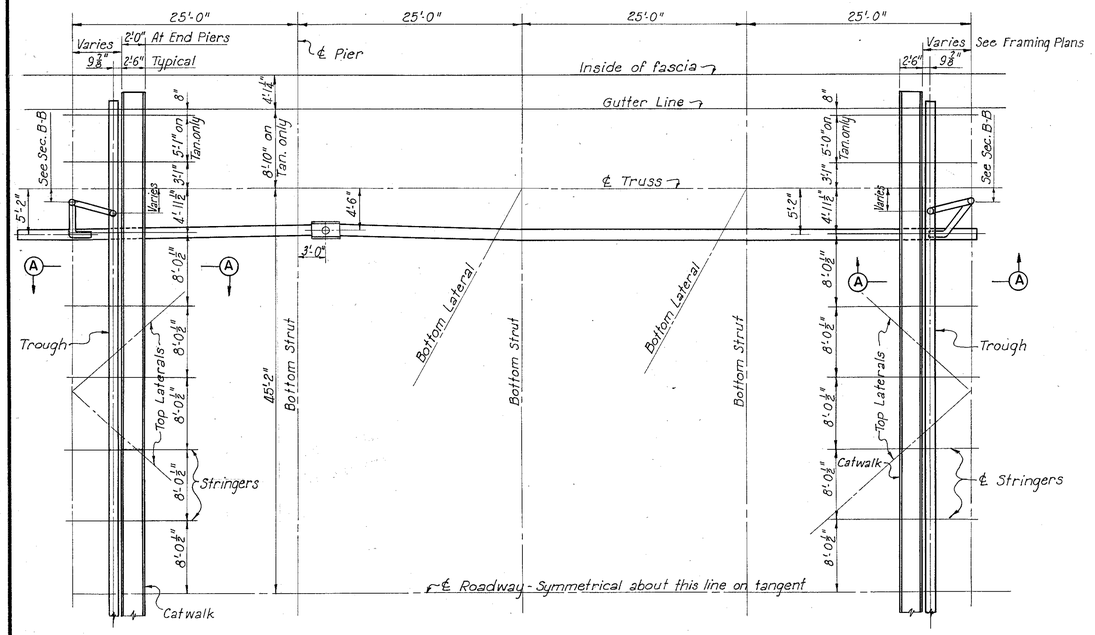
U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5

ROADWAY DRAINS
TYPE A

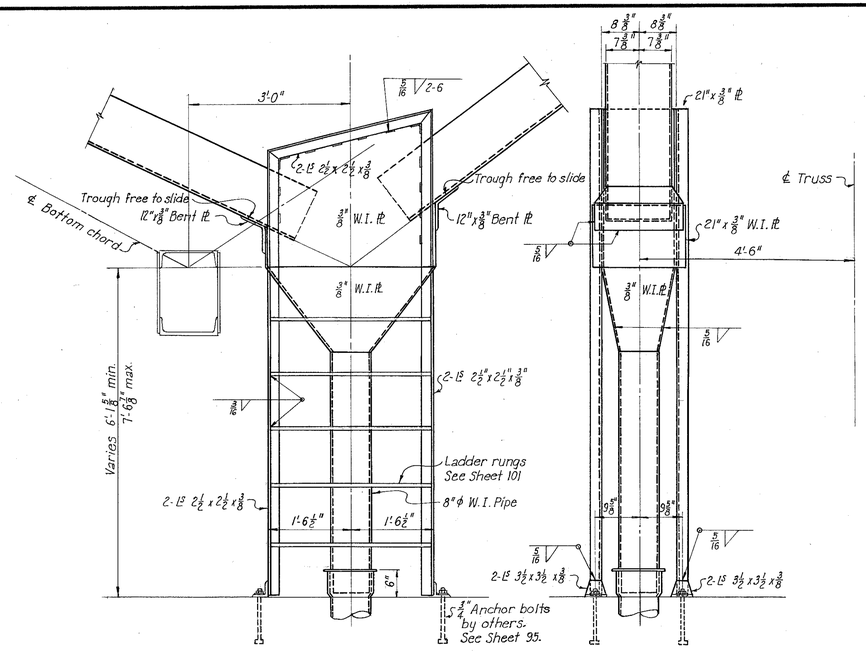
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½"=1'0" except as shown
MADE V.E.A. DATE 3-2-64
TRCD. A.H. DATE 11-16-64
CKD. D.H.D. DATE 11-18-64

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.105

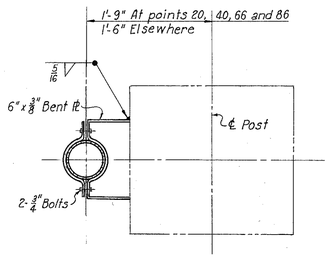


TYPICAL PLAN
Scale: $\frac{1}{8}$"=1'-0"

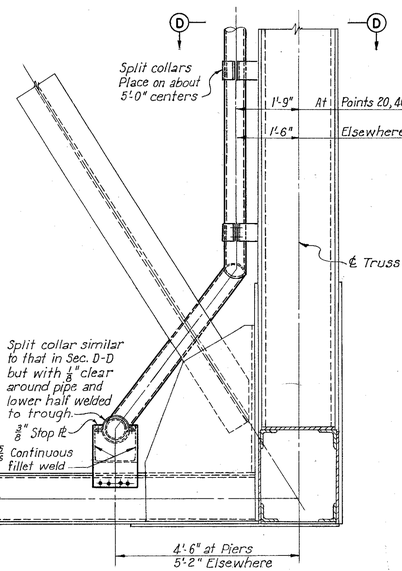


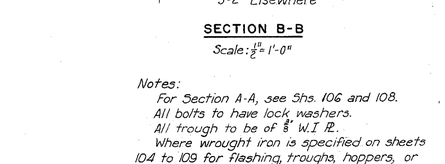
DETAIL OF HOPPER
Scale: $\frac{3}{4}$"=1'-0"

SECTION C-C

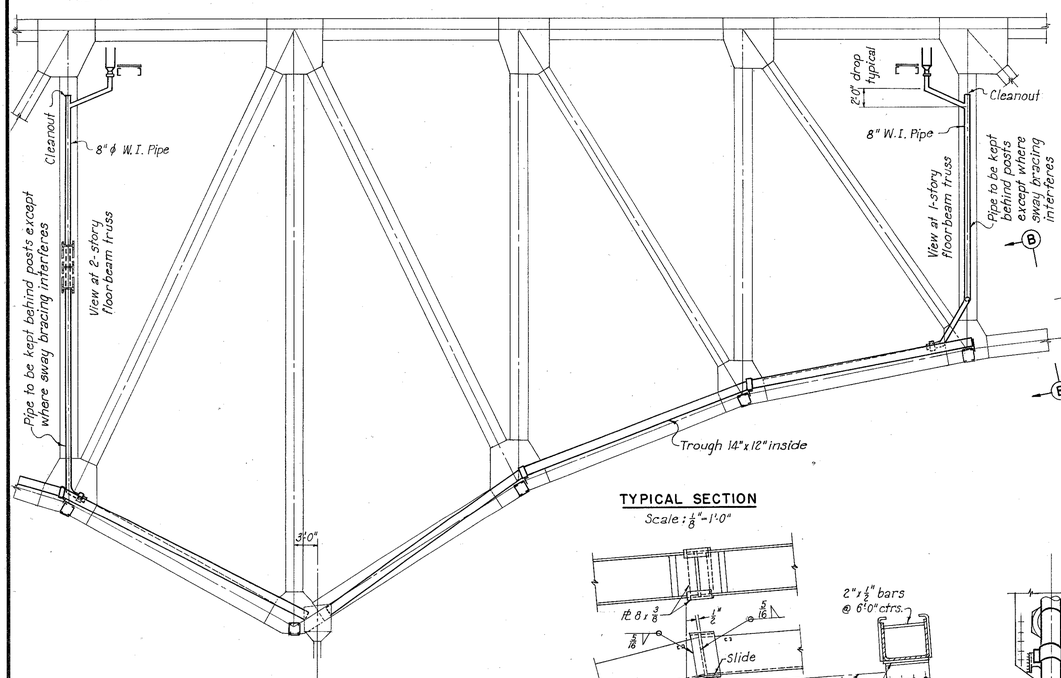


SECTION D-D
Scale: 1"=1'-0"

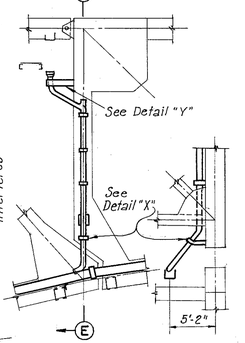




SECTION B-B
Scale: $\frac{1}{2}$"=1'-0"

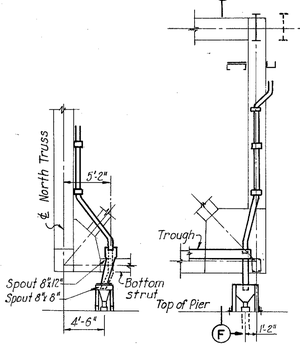


TYPICAL SECTION
Scale: $\frac{1}{8}$"=1'-0"



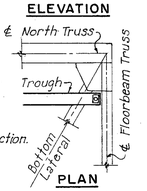
SECTION E-E

SECTION AT L113-L20
Scale: $\frac{1}{8}$"=1'-0"
Typical for L 318 - L 40, L 66 - L 700 and L 86 - L 900



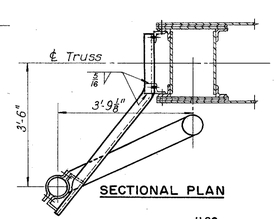
SECTION F-F **ELEVATION**

East End Pier is shown. At West End Pier the trough is omitted and the downspout goes down into the hopper as shown dotted ⁞⁞ with a typical split collar at the bottom strut.
Hopper is of typical construction.
Split cover at spout.

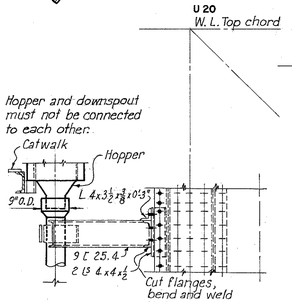


PLAN

SECTION AT END PIERS
Scale: $\frac{1}{8}$"=1'-0"

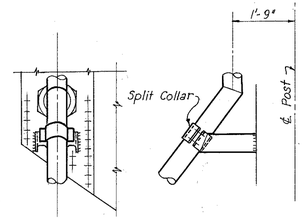


SECTIONAL PLAN



ELEVATION

DETAIL "Y"
Scale: $\frac{1}{2}$"=1'-0"
Drawn for panel point 113-20. Typical for 318-40, 66-700 and 86-900.



TROUGH SUPPORT AT BOTTOM STRUTS

DETAIL "X"
Scale: $\frac{1}{2}$"=1'-0"

Notes:
For Section A-A, see Shs. 106 and 108.
All bolts to have lock washers.
All trough to be of ⅜" W.I. flt.
Where wrought iron is specified on sheets 104 to 109 for flashing, troughs, hoppers, or downspouts, the contractor may use Mayari R or Corten steel instead at his option.

PART 3

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

104
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5
ROADWAY DRAINAGE SYSTEM
COLLECTION TROUGHS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE VEA DATE 2-3-54
TRCD. AH DATE 11-8-54
CKD. DMD DATE 11-9-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.104

RECEIVED
FEB 16 1955

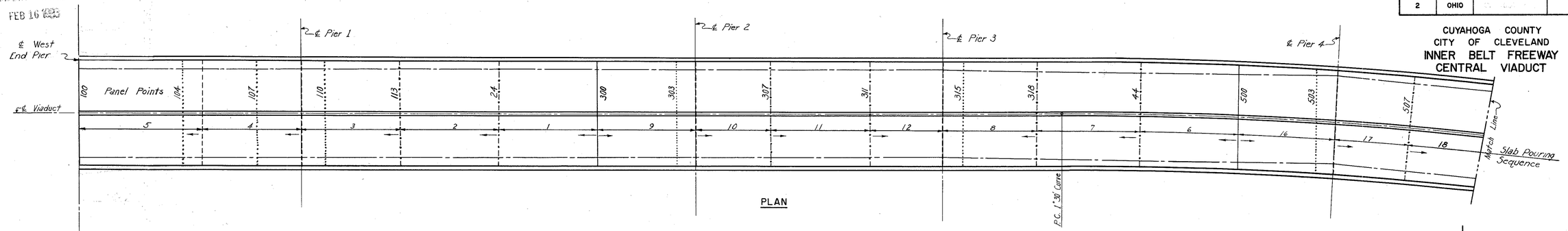
245

MICROFILMED
FEB 16 [illegible]

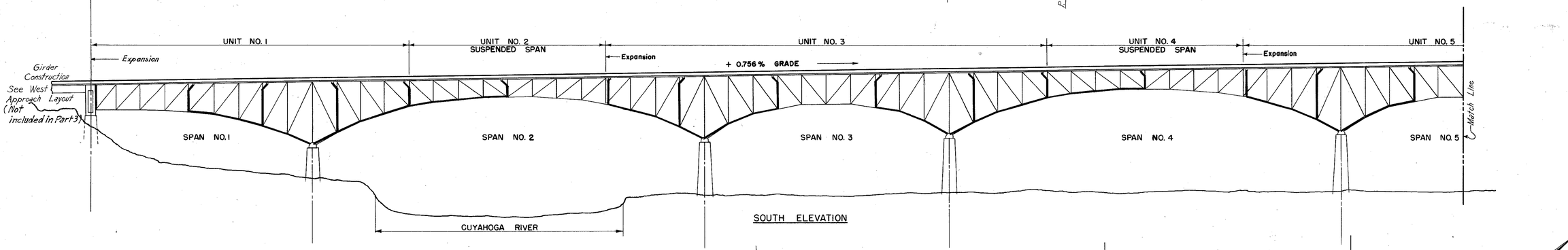
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

103
122

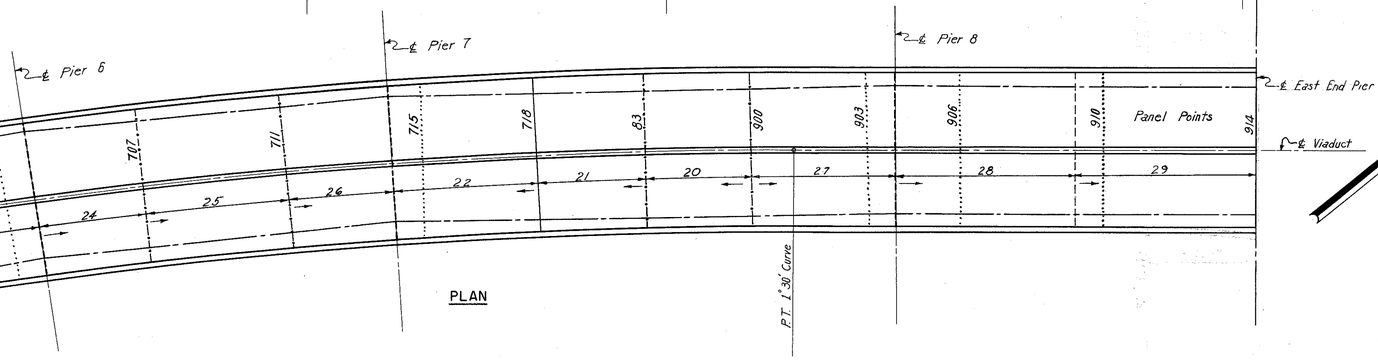
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



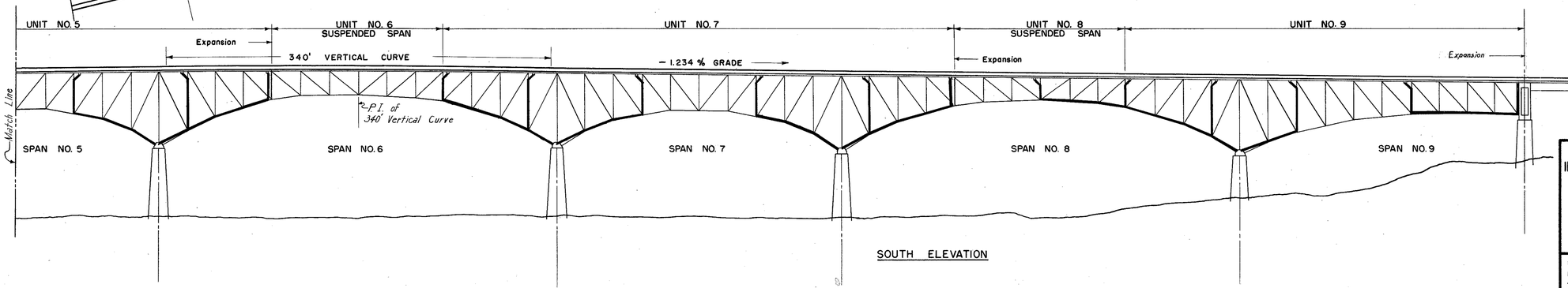
PLAN



SOUTH ELEVATION



PLAN



SOUTH ELEVATION

LEGEND

- ..... Cross Drain Type A. see Sheets 105, 106 and 114.
- -•-•- Cross Drain Type B, contraction joint. See Sheets 107, 108 and 114.
- ——— Cross drain Type C at expansion joint. See Sheets 109 to 113.
- ------ Contraction joint - no drain. See Sheet 114.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
GENERAL LAYOUT
ROADWAY DRAINAGE SYSTEM
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50'-0"
MADE VEA DATE 12-28-53
TRCD VEA DATE 2-6-54
CKD. DMD DATE 11-19-54

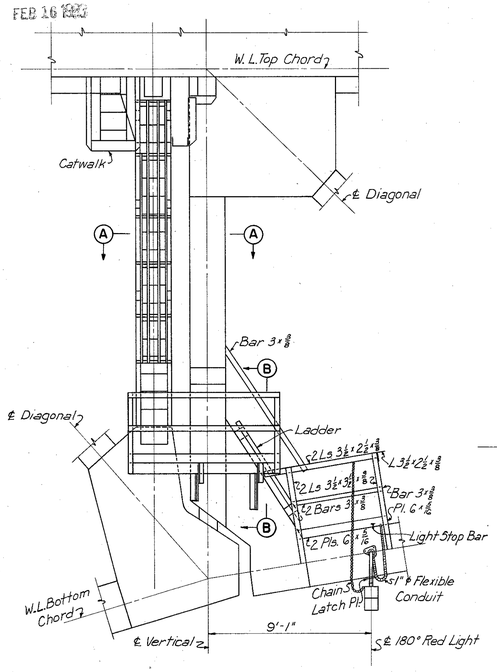
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.103

247

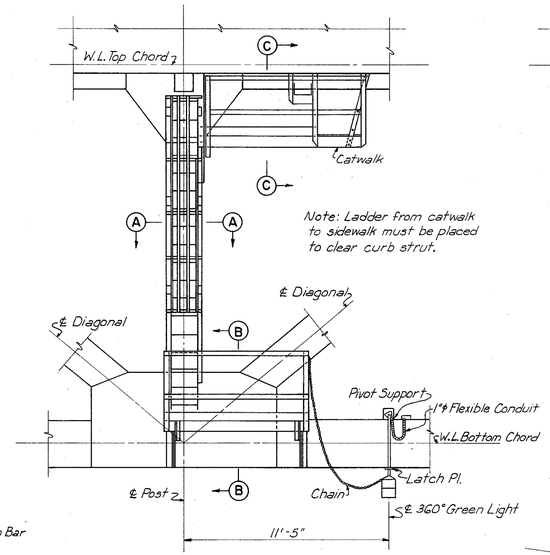
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

102
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

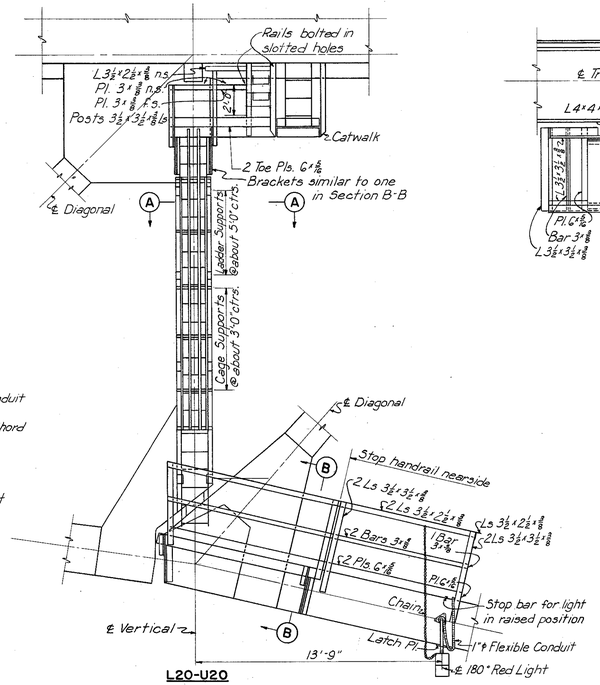


L28-U28

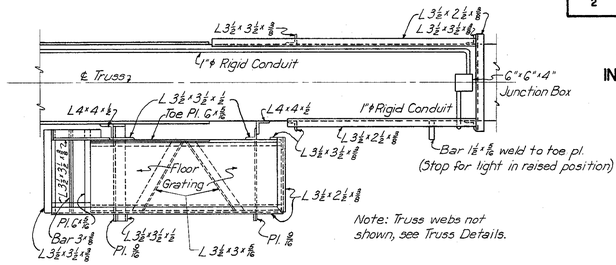


L24-U24

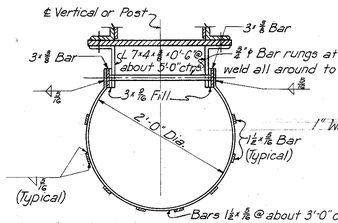
NORTH TRUSS UNIT NO. 2
Scale: ¼"=1'-0"



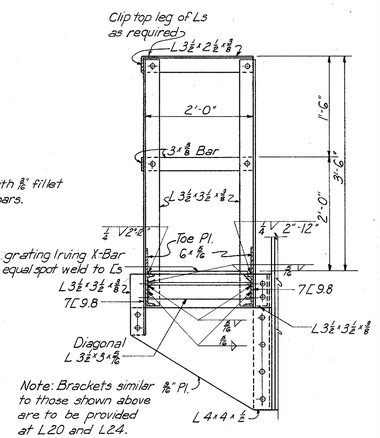
L20-U20



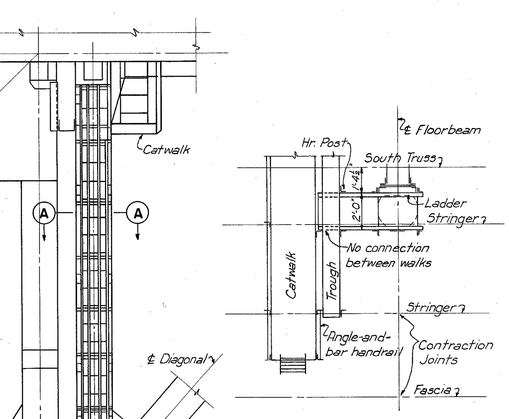
SECTION D-D
Scale: ½"=1'-0"



SECTION A-A
Scale: 1"=1'-0"

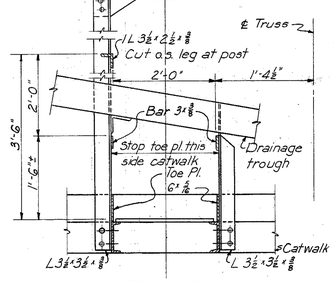


SECTION B-B
Scale: ¾"=1'-0"

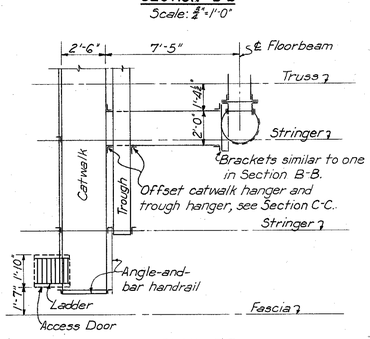


L20-U20

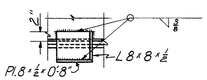
PLAN E-E
Scale: ¼"=1'-0"



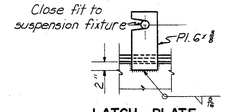
SECTION C-C
Scale: ¾"=1'-0"
Drawn for south truss. Reverse for north truss.



PLAN F-F
Scale: ¾"=1'-0"



PIVOT SUPPORT
Scale: ¾"=1'-0"



LATCH PLATE
Scale: ¾"=1'-0"

Notes:
For detail of navigation lights, see Sh. 122.
For detail of catwalk, see Sh. 106.
Where no light stop bar is provided, a chain catch shall be provided.
For additional details of latch plate, see Sh. 122.
Rivets to be ¾" except in connections to main members.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

ACCESS TO NAVIGATION LIGHTS

CLEVELAND CUYAHOGA COUNTY OHIO

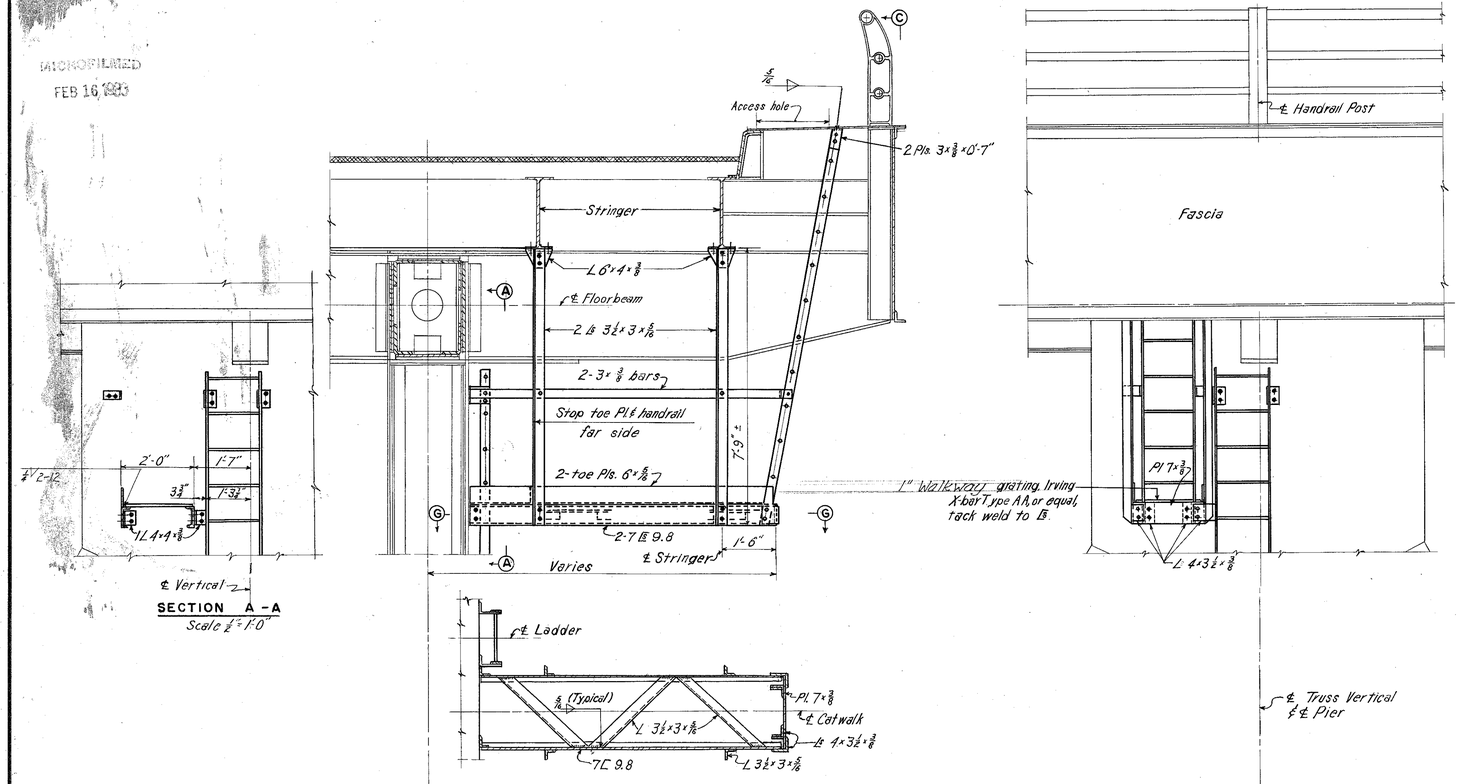
SCALE As Shown
MADE D.E.P. DATE 10-8-54
TRCD. N.A.M. DATE 12-2-54
CKD. O.M.D. DATE 12-14-54

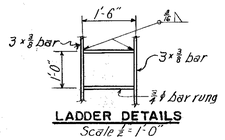
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.102

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

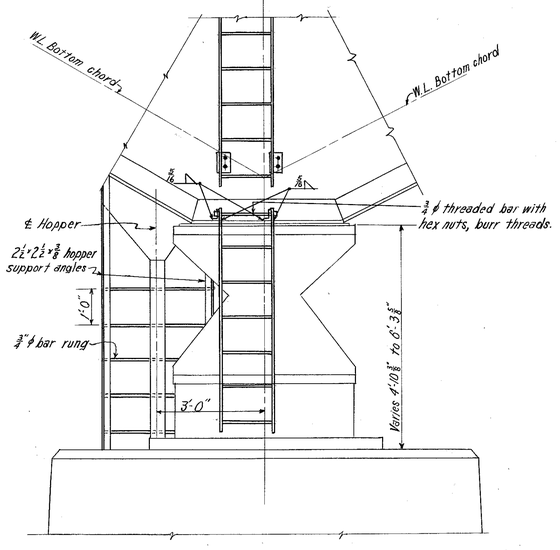
101
122

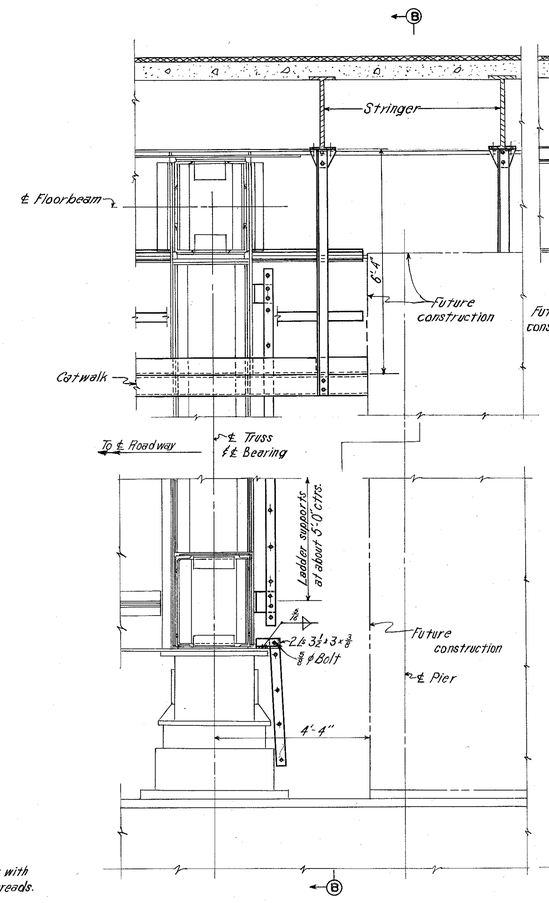
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

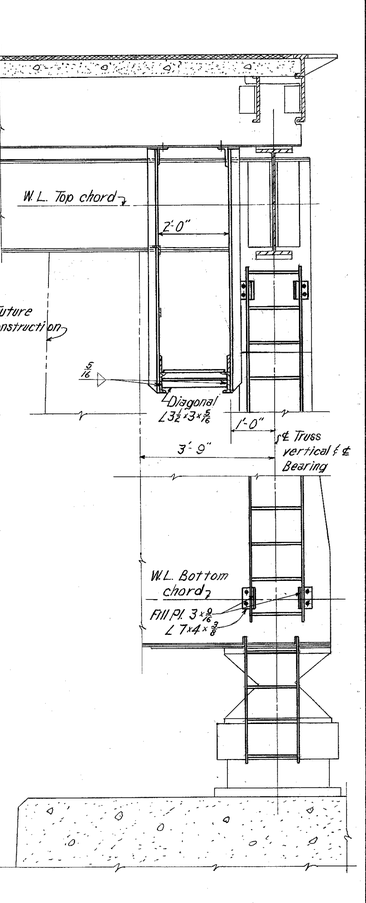




INTERIOR PIERS 1 TO 8







END PIERS

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5

LADDERS AT PIERS

CLEVELAND CUYAHOGA COUNTY OHIO

Notes:
For detail of access hole and cover see sheets 100 and 113.

For other details of catwalks see section A-A, sheet 109, 106, 108
For details of shoes see sheets 96, 97 and 98.

SCALE as shown
MADE DER DATE 8-27-54
TRCD WEJ DATE 11-2-54
CKD FKD DATE 11-4-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.101

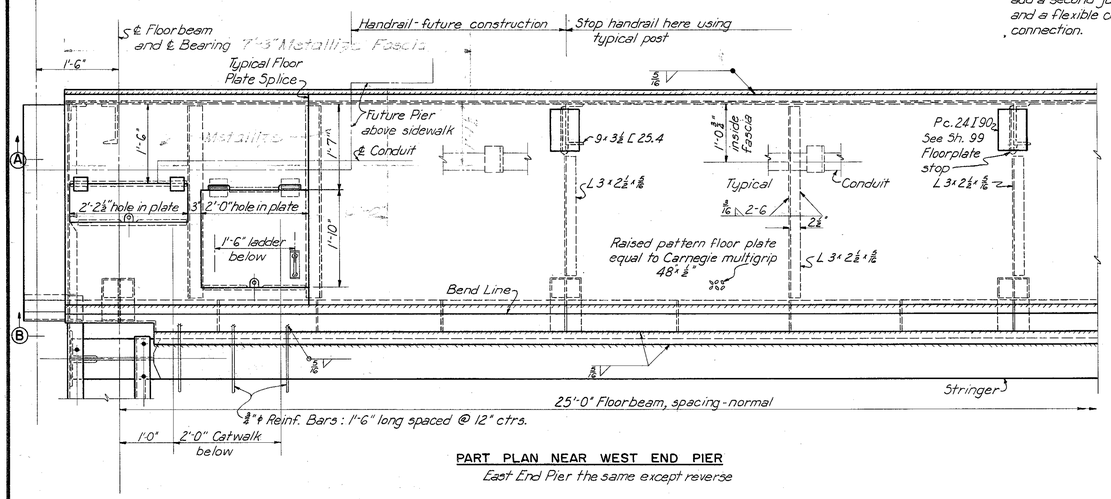
236

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

100
122

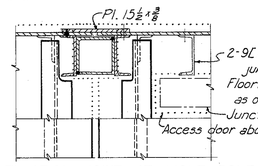
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

℄ West End Pier and Expansion Joint

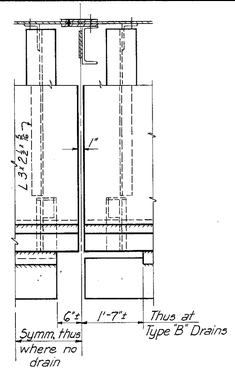


PART PLAN NEAR WEST END PIER
East End Pier the same except reverse

This detail is for points 314, 44, 504, 704 and 904. At points 40, 66, and 86, add a second junction box and a flexible conduit connection.



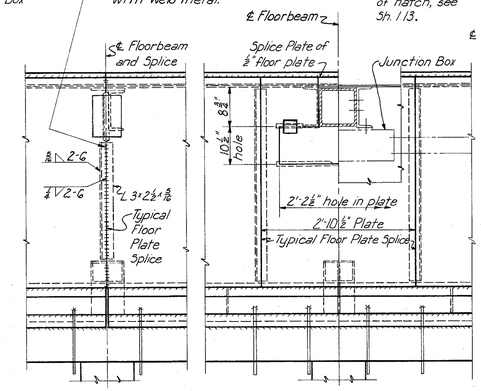
CONTRACTION JOINT AT LIGHT POLE



TYPICAL CONTRACTION JOINT

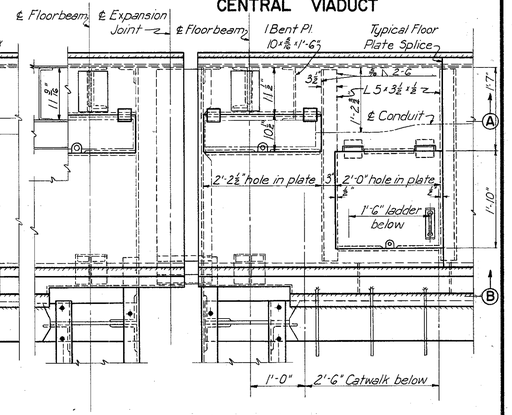
Typical Floor Plate Splice
Attach angle to left hand plate with ⅝" and ½" fillet shop welds as shown.
Erect floor plates with ¼" space between them and fill space full with weld metal.

Note: For details of hatch, see Sh. 113.



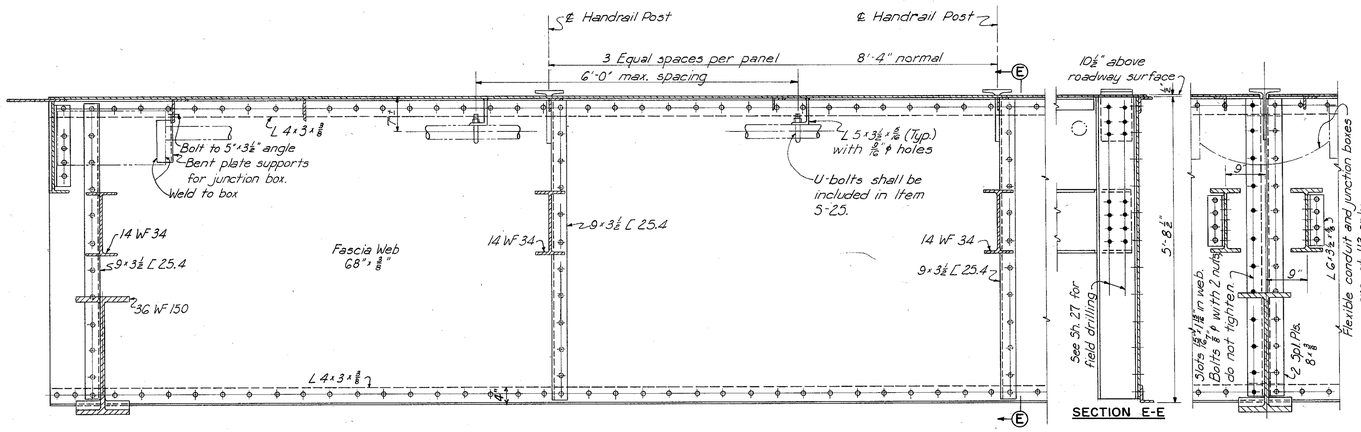
HANDRAIL POST CONNECTION
FLOOR PLATE SPLICE

LIGHT POLE CONNECTION



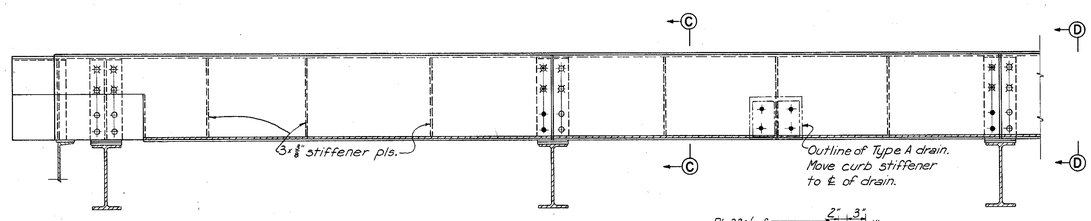
PLAN AT EXPANSION JOINT

SIDEWALK DETAILS

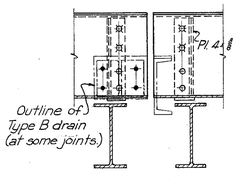


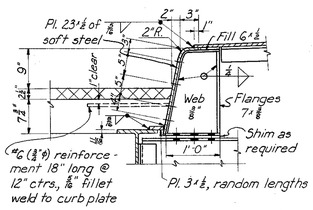
SECTION E-E

FASCIA DETAILS
SECTION A-A



SECTION C-C - TYPICAL CURB STIFFENER

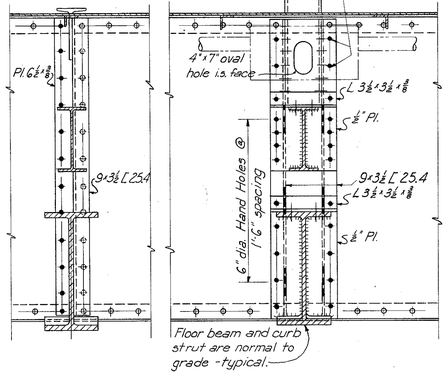




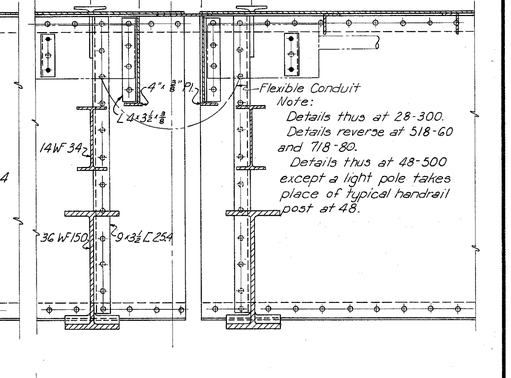
SECTION D-D - TYPICAL CURB SUPPORT

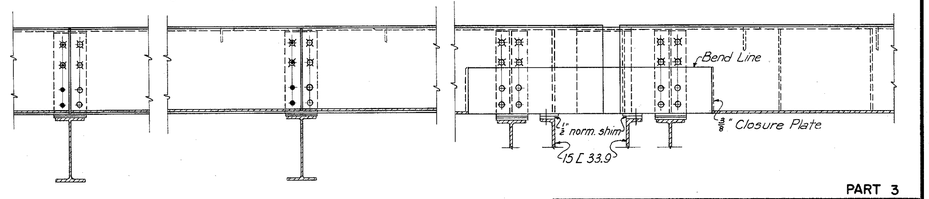
CURB DETAILS
SECTION B-B

Set light pole and channels vertical



℄ Floor beam
℄ & ℄ Handrail Post
Junction Box mounting holes drill 4 holes ⅞ dia.
℄ Joint
1'-6"
1'-6"
11"
1'-2"
11"
℄ Floor beam
℄ & ℄ Handrail Post





Use this drawing with Sh. 27, 28, 111, 112, and 113.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

FASCIA, SIDEWALK, & CURB DETAILS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ¾"=1'-0"
MADE R.L.L. DATE 9-10-54
TRCD N.A.M. DATE 10-22-54
CKD D.M.D. DATE 10-25-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.100

3/5

MICROFILMED
FEB 16 1955

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

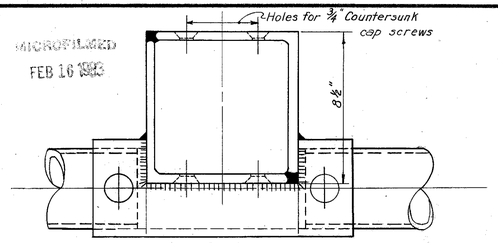
99
122

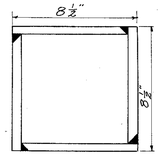
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

Some of these mode from 4-8"·½" Plates

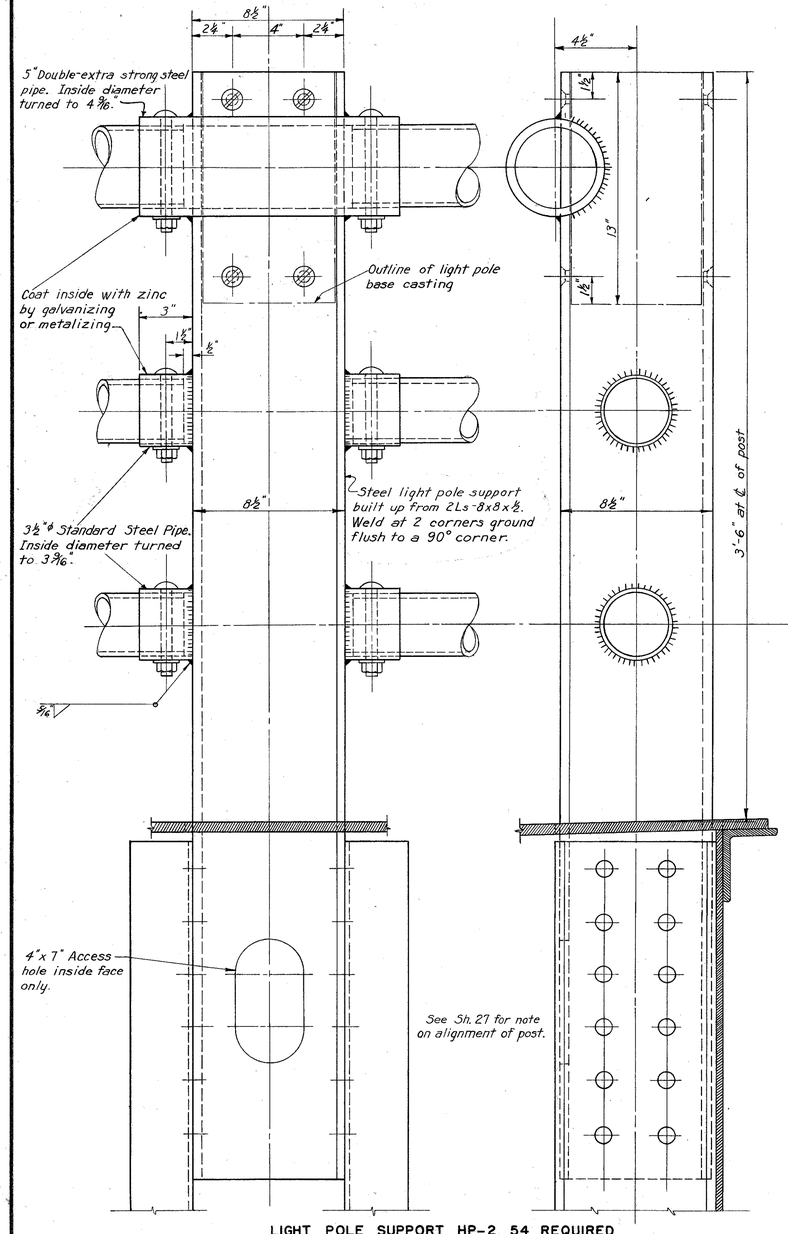
Fort Pitt asked for this in place of angles because of large amounts of warpage they got with anges

Revised As-Built

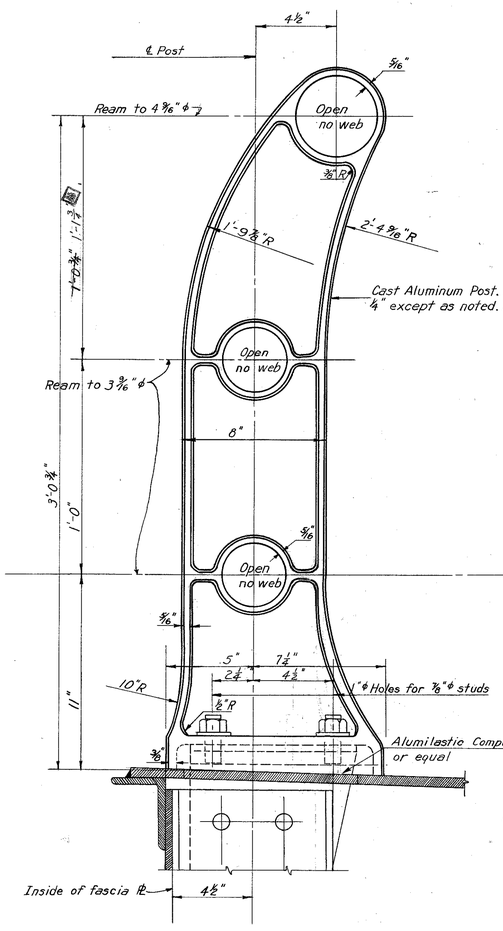


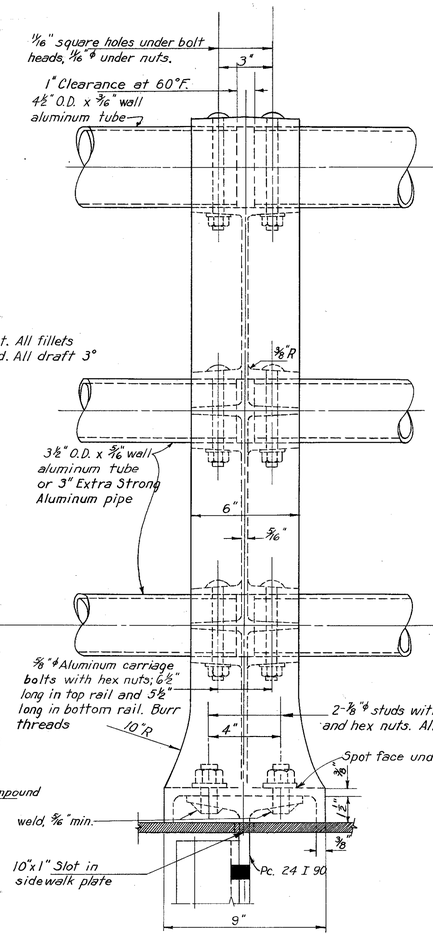


4 ℄'s -8·½ instead of 2 ℄'s 8·8·½

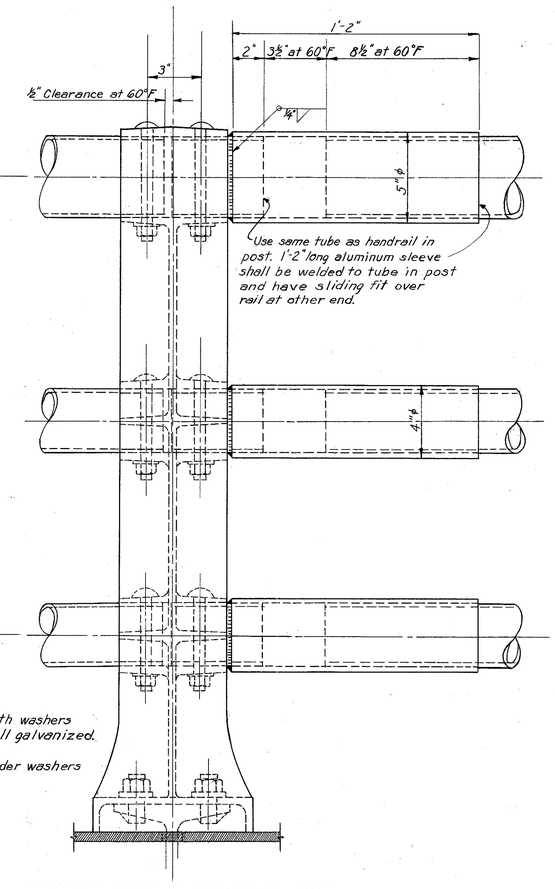


LIGHT POLE SUPPORT HP-2 54 REQUIRED
For details not noted see Typical Handrail Post.





All vertical dimensions for base of post are at ℄ Post.



HANDRAIL POST AT EXPANSION JOINT

At each expansion joint use detail shown above on one side of joint and typical post or light pole support on other side.

TYPICAL HANDRAIL POST HP-1 606 REQUIRED

NOTES ON HANDRAILS

Handrails shall be fabricated in lengths equal to 1 space, generally 8'-3". See framing plans for exact spacing.

Bolt holes in tubes shall be 1 1/16"ϕ at one end. Other end shall have slotted holes 1 1/16"x1" except at expansion joint where no holes are required at expansion end. Bolts to be centered in slots at 60°F.

Aluminum washer shims may be used between steel and post base to align posts. Maximum thickness shall be 1/16". Space below post base plate shall be thoroughly calked with Alumilastic compound or equal.

Handrail posts shall be set normal to grade.

Light pole supports shall be set vertical.

For connection of light pole supports and handrail posts to superstructure see Sheets 27, 28, and 100.

Handrail is to end 8'-9" from ℄ of Bearing of end piers. See Sheet 100.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5

HANDRAIL

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3"-1'-0"
MADE DME DATE 8-24-54
TRCD GJK DATE 12-8-54
CKD. DMD DATE 11-22-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.99

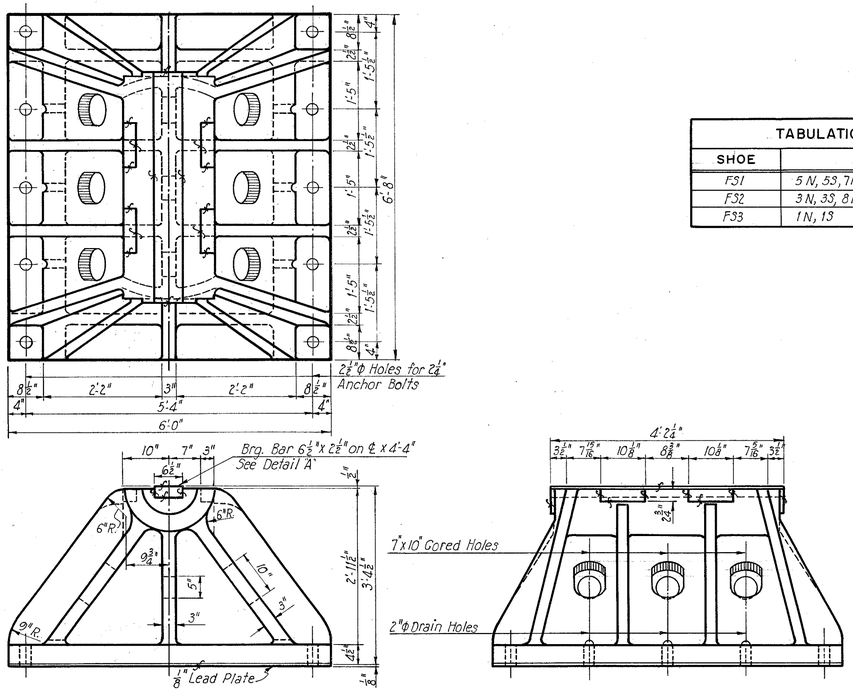
10-13-58 Revised As-Built JEP

MICROFILMED
FEB 16 [illegible]

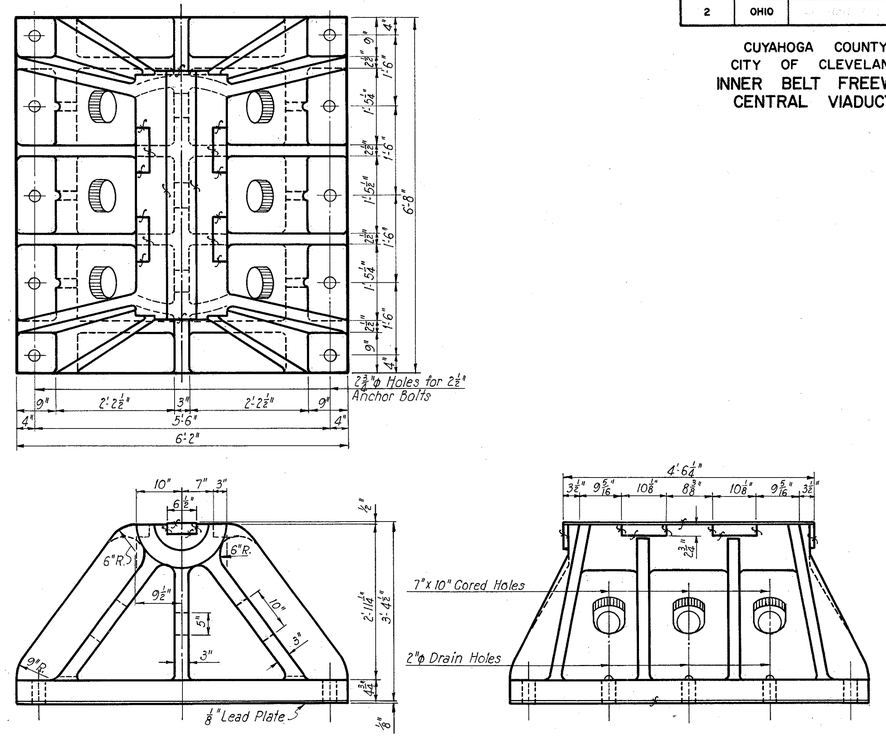
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	98
2	OHIO			122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

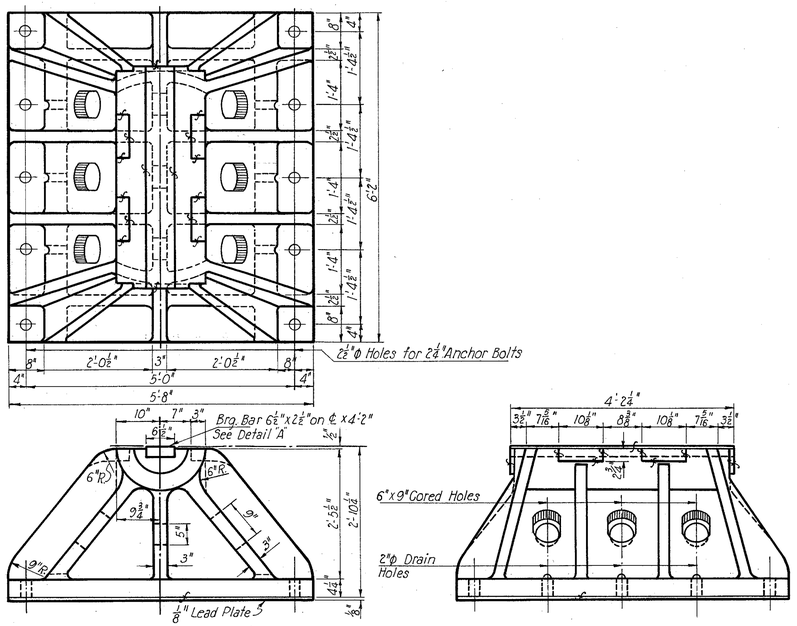
TABULATION OF SHOES	
SHOE	PIER
F51	5 N, 5S, 7N, 7S
F52	3 N, 3S, 8 N, 8S
F53	1 N, 1S



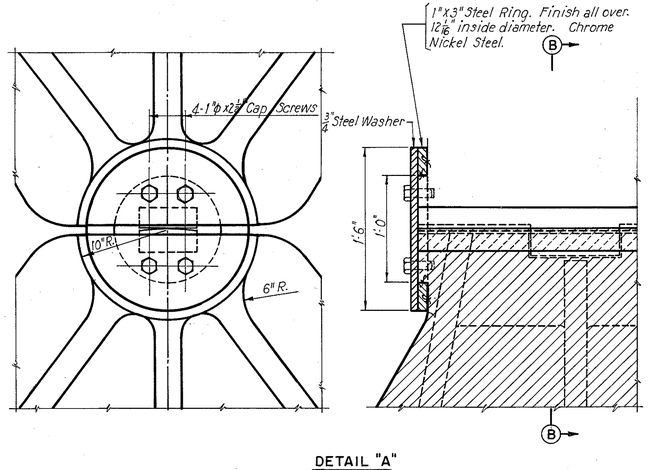
FIXED SHOE F.S.-2
Scale: 3/4"=1'-0"



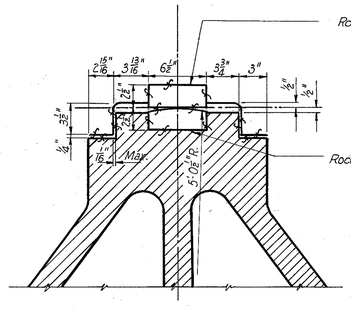
FIXED SHOE F.S.-3
Scale: 3/4"=1'-0"



FIXED SHOE F.S.-1
Scale: 3/4"=1'-0"



DETAIL "A"
Scale: 1 1/2"=1'-0"



SECTION B B
Scale: 1 1/2"=1'-0"

Note:
For General Notes on fabrication and materials of shoe castings, see Sh. 97.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

FIXED SHOES

CLEVELAND CUYAHOGA COUNTY OHIO

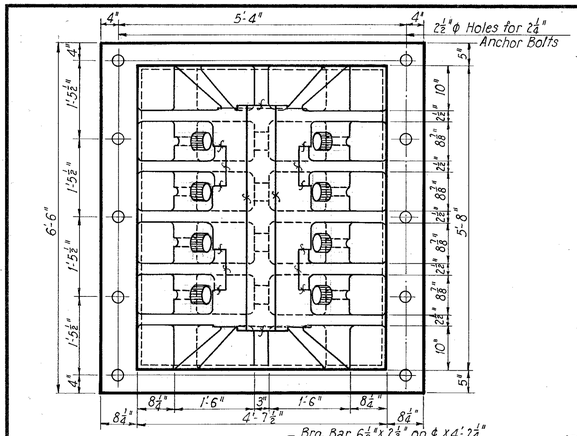
SCALE 3/4", 1 1/2" = 1'-0"
MADE D.L.C. DATE 2-26-54
TRCD. R.R. DATE 8-2-54
CKD. D.M.E. DATE 9-2-54

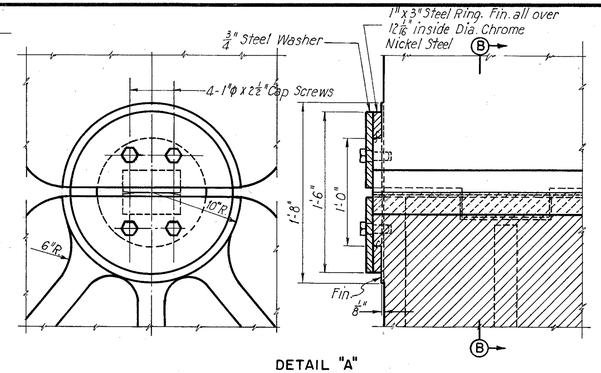
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.98

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

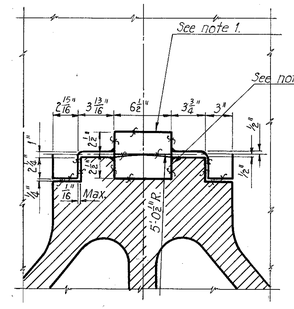
97
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

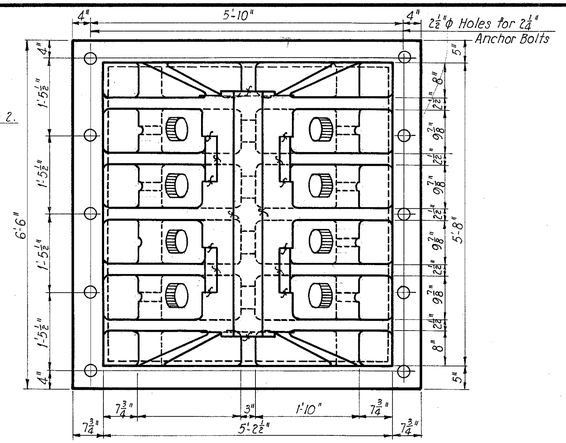




DETAIL "A"
Scale: 1 1/2" = 1'-0"

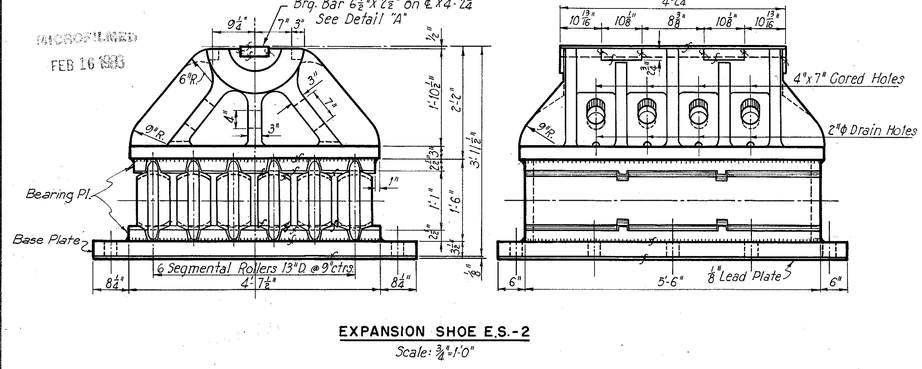


SECTION B-B
Scale: 1 1/2" = 1'-0"

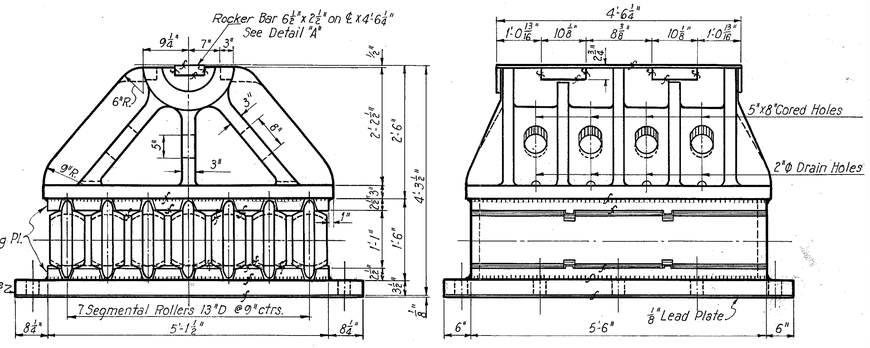


Note 1. 1 bar 6 1/2" x 2 1/2". Bar to be press fit into upper shoe. Bevel edges of shoe 5/16" @ 45° and weld. Grind weld flush with casting. Bottom surface of bar shall be horizontal.

Note 2. 1 bar 6 1/2" x 2 1/2" on ℄. Bar to be press fit into lower shoe. Bevel edges of groove in shoe 5/16" @ 45° and weld bar to shoe. Grind weld flush with casting.



EXPANSION SHOE E.S.-2
Scale: 3/4" = 1'-0"



EXPANSION SHOE E.S. 3

NOTES:

Rollers shall be set vertical under full dead loads at 60°F.

Machined surfaces of rollers which bear on base plates and all exposed surfaces shall be painted.

All contact surfaces between metal parts shall be finished.

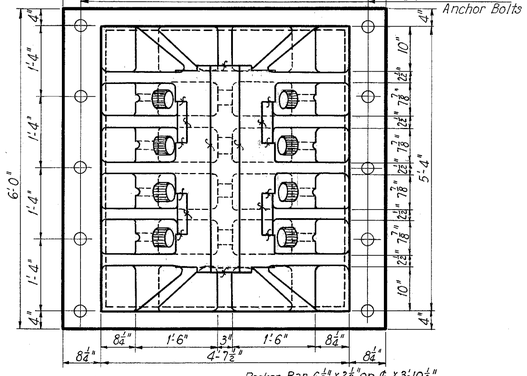
All base plates and shoe castings shall be scribed with longitudinal and transverse center lines.

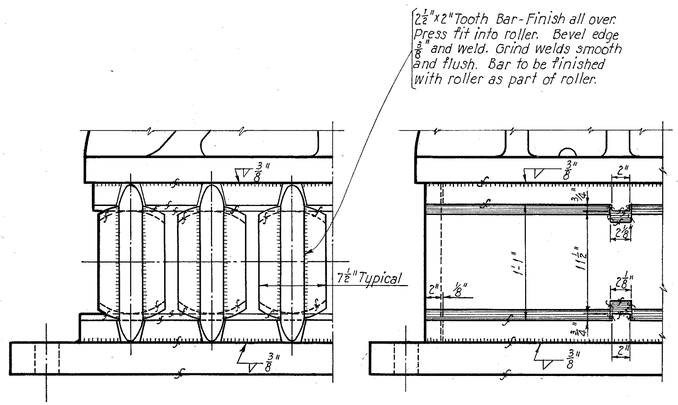
Spaces around anchor bolts in base plates shall be filled with an approved metallic filler, such as babbitt, poured in place before setting nuts.

MATERIALS:

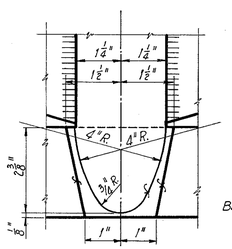
Castings: Carbon steel. A.S.T.M. Spec. A148-50T Grade 90-60.
Rocker Bar Inserts: U.S.S. Carilloy T1 or equal, with a minimum Y.P. of 90,000 p.s.i. All surfaces to be finished.
Roller Forgings: A.S.T.M. A 237-52T Class C.
Bearing Plates: A.S.T.M. A148-50T Grade 90-60.
Base Plates: Structural Carbon Steel.
Tooth Bar: Structural Carbon Steel.

TABULATION OF SHOES	
SHOE	PIER
ES-1	6N
ES-2	2N, 2S, 4N, 6S
ES-3	4S

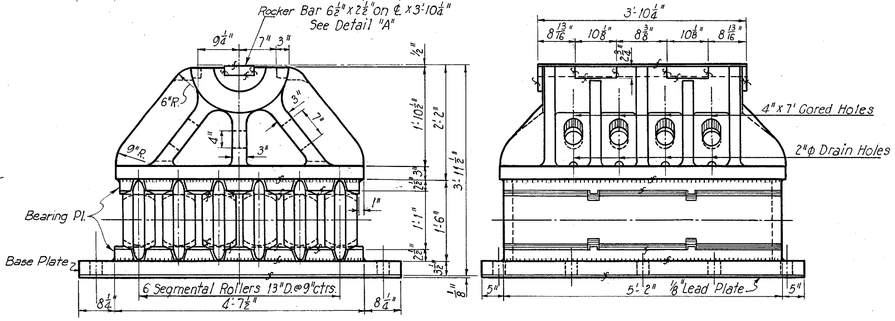




ROLLER DETAILS
Scale: 1 1/2" = 1'-0"



TOOTH BAR DETAIL
Scale: 6" = 1'-0"



EXPANSION SHOE E.S.-1
Scale: 3/4" = 1'-0"

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17.5

EXPANSION SHOES

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3/4", 1 1/2" = 1'-0"
MADE D.L.G. DATE 2-22-54
TRCD. R.R. DATE 7-25-54
CKD. DME DATE 9-1-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

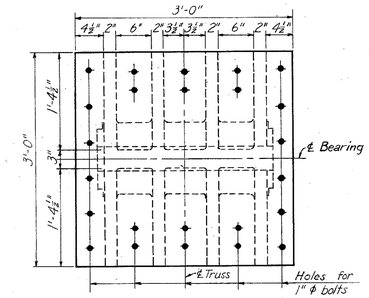
914-1A SHEET- 2.97

299

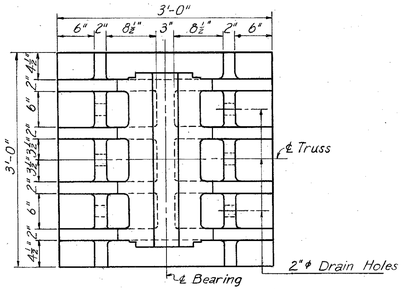
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

96
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

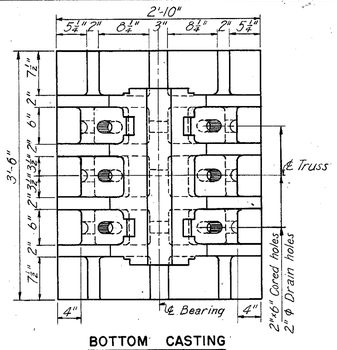


TOP CASTING

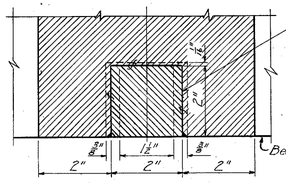


BOTTOM CASTING

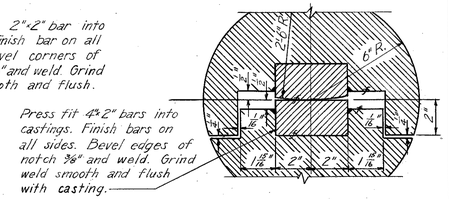
Top casting same as top casting for shoe ES-4



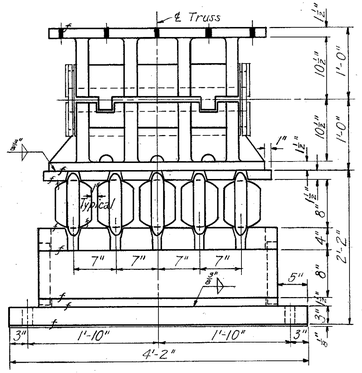
BOTTOM CASTING

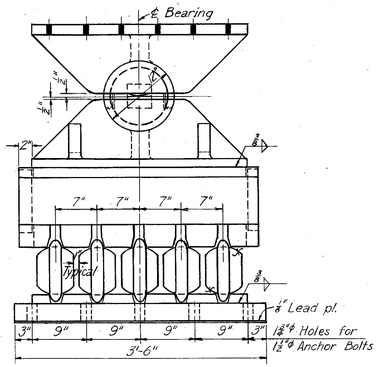


SECTION A-A
Scale: 6"=1'-0"

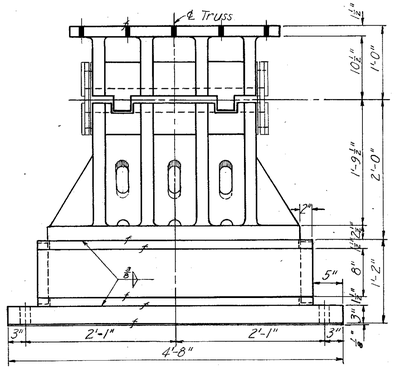


SECTION B-B
Scale: 3"=1'-0"

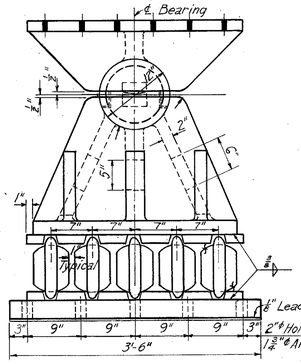


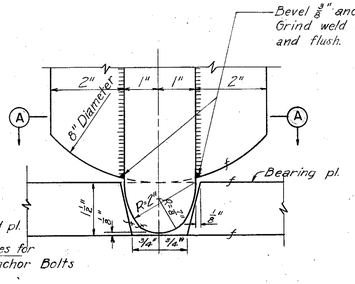


EXPANSION SHOE ES-4
Scale: 1"=1'-0"

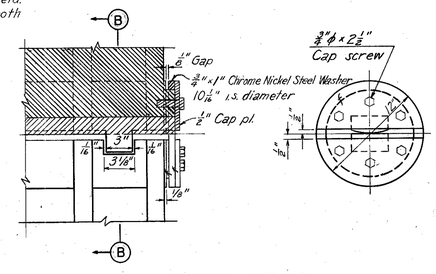


EXPANSION SHOE ES-5
Scale: 1"=1'-0"

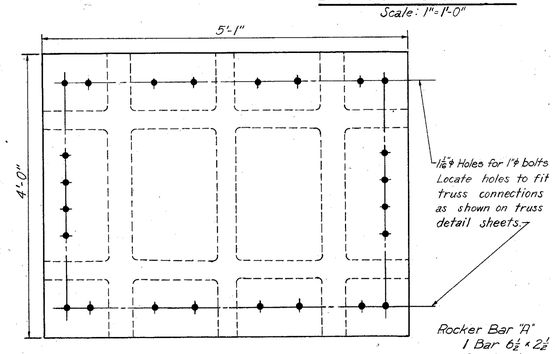




ROLLER AND TOOTH BAR DETAIL
Scale: 6"=1'-0"



CASTING DETAILS
Scale: 1 1/2"=1'-0"

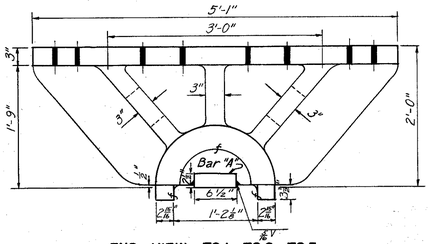


PLAN FOR TS1, TS2, TS3
Scale: 1"=1'-0"

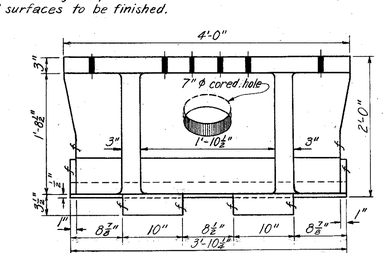
Rocker Bar 'A'
1 Bar 6 1/2 x 2 1/2 pressed fit into casting. Bevel edges of casting 7/16 x 45° and weld bar in place. Bar to be U.S.S. Carilloy T1 or equal, with a minimum yield point of 90,000 psi. All surfaces to be finished.

TABULATION OF SHOE TOP CASTINGS	
Casting	Pier
TS 1	6N
TS 2	2N, 2S, 3N, 3S, 4N, 5N, 5S, 6S, 7N, 7S, 8N, 8S
TS 3	1N, 1S, 4S

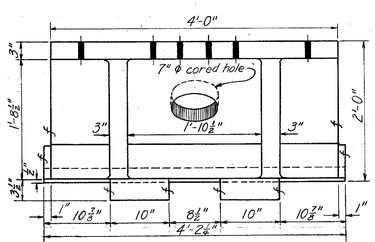
SHOES FOR END PIERS	
Shoe	Pier
ES 4	WN, EN
ES 5	WS, ES



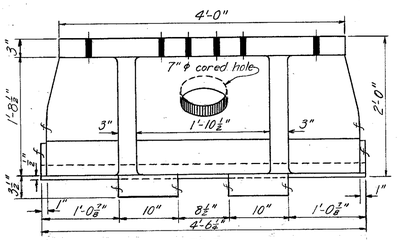
END VIEW TS1, TS2, TS3
Scale: 1"=1'-0"



TS 1
Scale: 1"=1'-0"



TS 2
Scale: 1"=1'-0"



TS 3
Scale: 1"=1'-0"

Note:
For General Notes on fabrication and materials of shoe castings, see Sh. 97.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17.5
SHOES AT END PIERS AND SHOE TOP CASTINGS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE VDG DATE 4-25-54
TRCD JDB DATE 8-11-54
CKD DME DATE 8-19-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.96

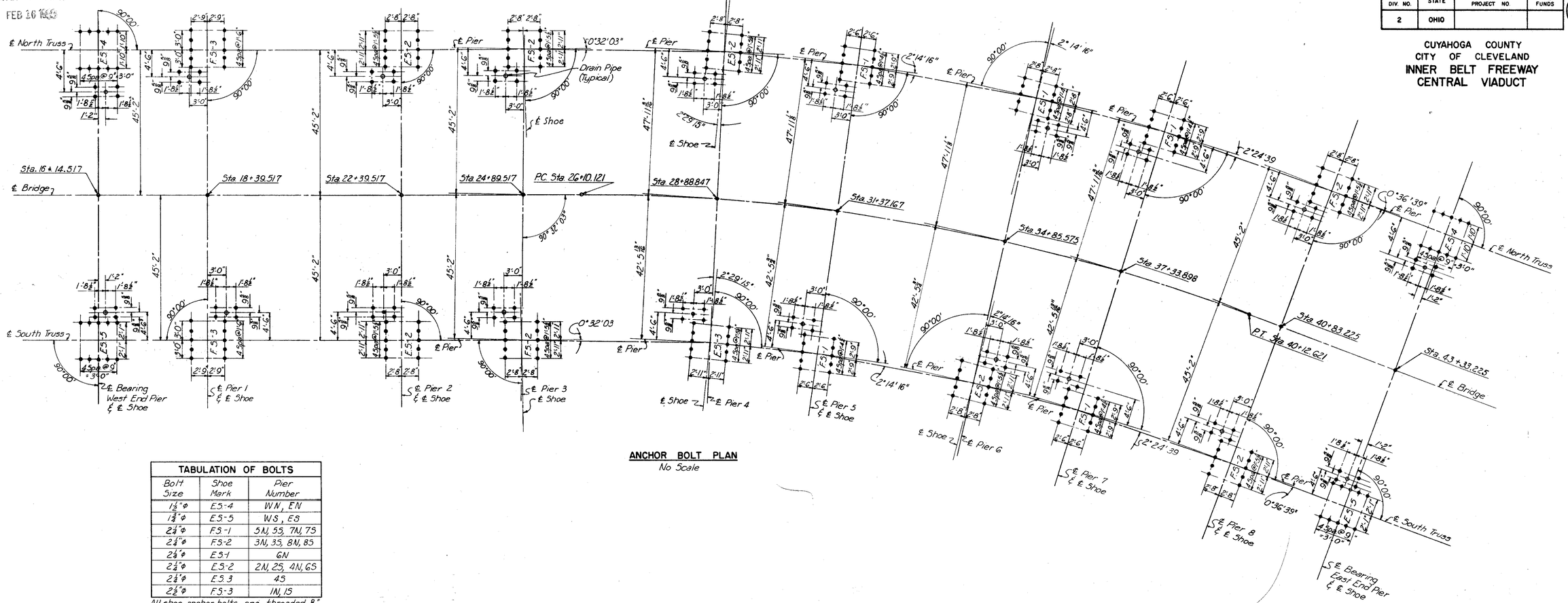
301

FEB 26 1955

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

95
122

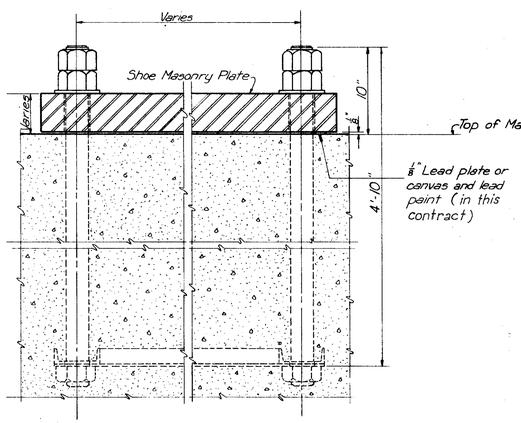
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



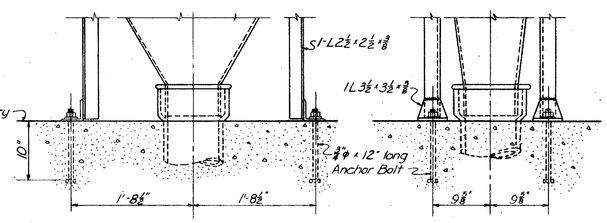
ANCHOR BOLT PLAN
No Scale

TABULATION OF BOLTS		
Bolt Size	Shoe Mark	Pier Number
1½"φ	E.S-4	WN, EN
1¾"φ	E.S-5	WS, ES
2¼"φ	F.S-1	5N, 5S, 7N, 7S
2¼"φ	F.S-2	3N, 3S, 8N, 8S
2½"φ	E.S-1	6N
2½"φ	E.S-2	2N, 2S, 4N, 6S
2½"φ	E.S-3	4S
2½"φ	F.S-3	1N, 1S

All shoe anchor bolts are threaded 8" and provided with lock washer and hex nuts
All bolts furnished under a previous contract.



ANCHOR BOLT DETAIL
Scale: 1½"=1'-0"



HOPPER ANCHOR BOLT DETAIL
Scale: 1"=1'-0"
Bolts furnished and set under a previous contract.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5
ANCHOR BOLT PLAN AND DETAILS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE D.F.C. DATE 3-9-54
TRCD N.R.M. DATE 6-4-54
CKD. D.E.R. DATE 6-28-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET: 2.95

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1267 ( )	

94
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U912

U913

U914

U911-U912
4 L 8x6x1/2 -s
2 Pls. 30x 13/16 -s
1 Pl. 23x 3/8 -s
1 Pl. 23x 1/2 -s.

U912-U913
4 L 8x6x1/2 -s
2 Pls. 30x 3/8 -s
1 Pl. 23x 3/8 -s
1 Pl. 23x 1/2 -s

U913-U914
4 Ls 8x6x1/2 -s
2 Pls. 30x 3/8 -s
1 Pl. 23x 3/8 -s
1 Pl. 23x 1/2 -s

U911-L912
4 L 4x4x 1/2 -s
2 Pls. 24x 3/8 -s
2 Pls. 23x 3/8

U912-L912
4 Ls 4x4x 1/2 -s
2 Pls. 24x 3/8 -s
2 Pls. 23x 3/8

U912-L913
4 Ls 4x4x 1/2 -s
2 Pls. 24x 1/2 -s
2 Pls. 23x 3/8

U913-L913
4 Ls 4x4x 1/2 -s
2 Pls. 24x 1/2 -s
2 Pls. 24x 3/8 -s

U913-L914
4 Ls 4x4x 1/2 -s
2 Pls. 24x 1/2 -s
2 Pls. 23x 3/8

U914-L914
4 Ls 4x4x 3/8
2 Pls. 24x 3/8
2 Pls. 23x 3/8

DIAPHRAGM "A"
4 L 8x4x 1/2
Pl. x 1/2
4 L 4x4x 1/2

DIAPHRAGM "B"
6 L 4x4x 1/2
Pl. x 1/2

DIAPHRAGM "C"
4 Ls 4x4x 5/8
1 Pl. x 1
1 L 8x8x 1/2
1 Fill Pl. 8x 5/8

L911-L912
4 L 8x6x 1/2 -s
2 Pls. 30x 13/16 -s
2 Pls. 14x 1/2 -s
1 Pl 22x 3/8 -s
1 Pl. 22x 1/2 -s

L912-L913
4 Ls 8x6x 1/2 -s
2 Pls. 30x 3/8 -s
2 Pls. 30x 1/2 -s
1 Pl. 23x 3/8 -s
1 Pl. 23x 1/2 -s

L913-L914
4 L 8x6x 1/2 -s
2 Pls. 30x 3/8 -s
1 Pl. 23x 3/8 -s
1 Pl. 23x 1/2 -s

L-912

L 913

L 914

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17 5
TRUSS DETAILS UNIT 9
PANELS 912, 913 AND 914
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2"= 1'-0"
MADE V.G.S. DATE 5-21-54
TRCD M.A.C. DATE 1-10-55
CKD. D.L.C. DATE 7-15-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.94

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

93
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U909

U910

U911

U908-U909
1 Pl. 23 x 3/8 -5
4 Ls 8 x 6 x 1/2 -5
2 Pls. 30 x 13/16 -5
1 Pl. 23 x 1/2 -5

U909-U910
1 Pl. 23 x 3/8 -5.
4 Ls 8 x 6 x 1/2 -5.
2 Pls. 30 x 13/16 -5.
2 Pls. 14 x 9/16 -5.
1 Pl. 23 x 1/2 -5.

U910-U911
1 Pl. 23 x 3/8 -5.
4 Ls 8 x 6 x 1/2 -5.
2 Pls. 30 x 13/16 -5.
2 Pls. 14 x 9/16 -5.
1 Pl. 23 x 1/2 -5.

U911-U912
1 Pl. 23 x 3/8 -5.
4 Ls. 8 x 6 x 1/2 -5.
2 Pls. 30 x 13/16 -5.
1 Pl. 23 x 1/2 -5.

DIAPHRAGM "A"
4 Ls 8 x 4 x 1/2
4 Ls 4 x 4 x 1/2
1 Pl. 1/2"

DIAPHRAGM "B"
6 Ls 4 x 4 x 1/2
1 Pl. 1/2

L908-L909
1 Pl. 23 x 3/8 -5.
4 Ls 8 x 6 x 7/16 -5.
2 Pls. 30 x 3/8 -5.
1 Pl. 23 x 1/2 -5.

L909-L910
1 Pl. 23 x 3/8 - 5.
4 Ls 8 x 6 x 7/16 - 5.
2 Pls. 30 x 3/8 -5.
2 Pls. 14 x 3/4 - 5.
1 Pl. 23 x 1/2 - 5.

L910-L911
1 Pl. 22 x 3/8 5.
4 Ls 8 x 6 x 1/2 -5.
2 Pls. 30 x 3/4 -5.
2 Pls. 14 x 1/2 -5.
1 Pl. 22 x 1/2 -5.

L911-L912
1 Pl. 22 x 3/8 - 5.
4 Ls 8 x 6 x 1/2 -5.
2 Pls. 30 x 3/4 - 5.
2 Pls. 14 x 1/2 -5.
1 Pl. 22 x 1/2 - 5.

L909

L910

L911

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5
TRUSS DETAILS, UNIT 9
PANELS 909, 910 AND 911
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE J.K. DATE 6-2-54
CHKD. G.M.R.
TRCD. D.L.S. DATE 9-8-54
CKD. D.L.C. DATE 9-20-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.93

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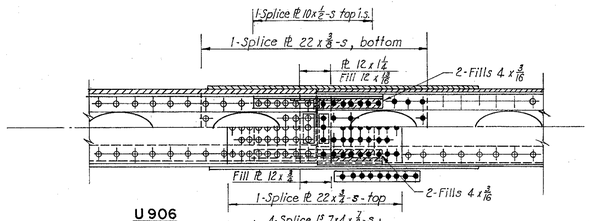
FEB 16 1955

CUY-90-15.45

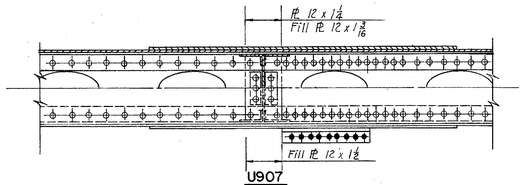
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

92
122

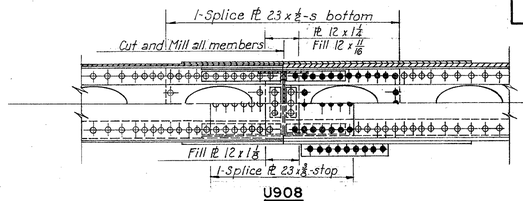
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



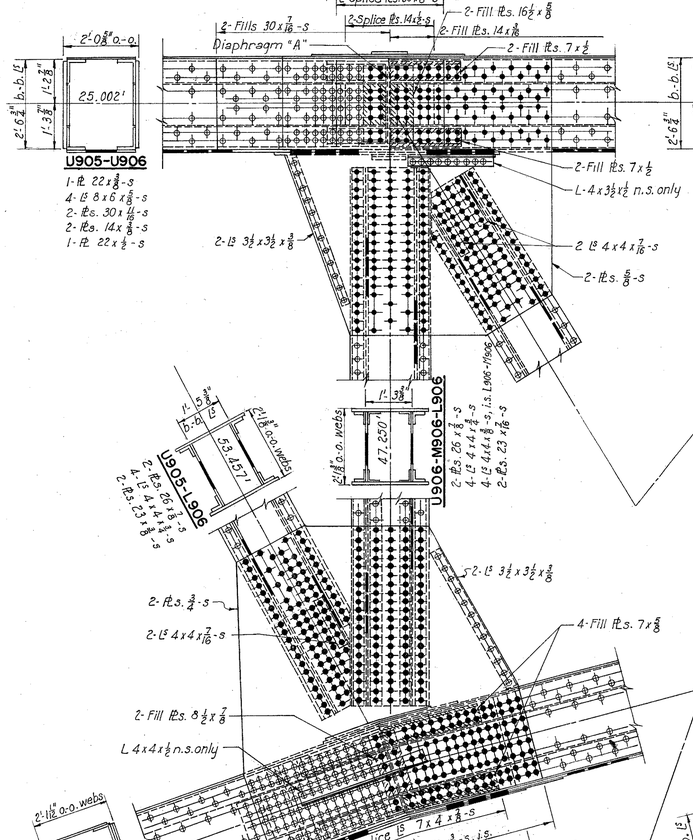
U 906



U907

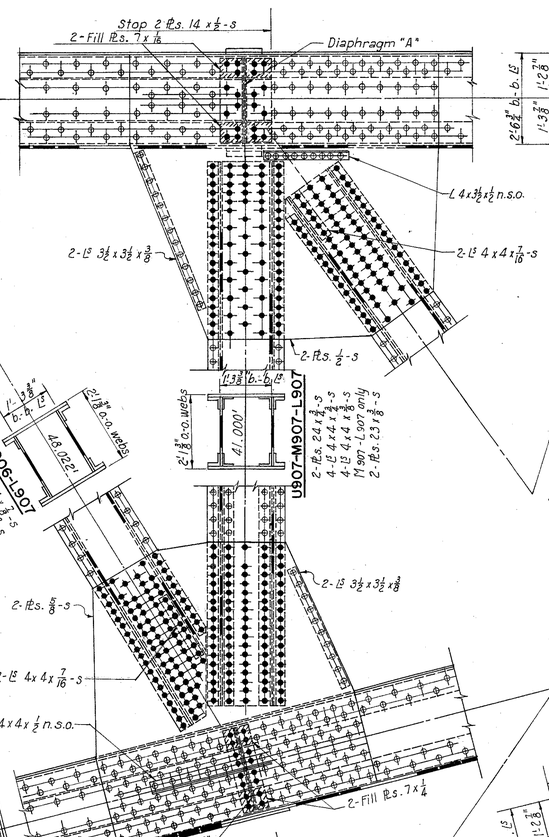


U908

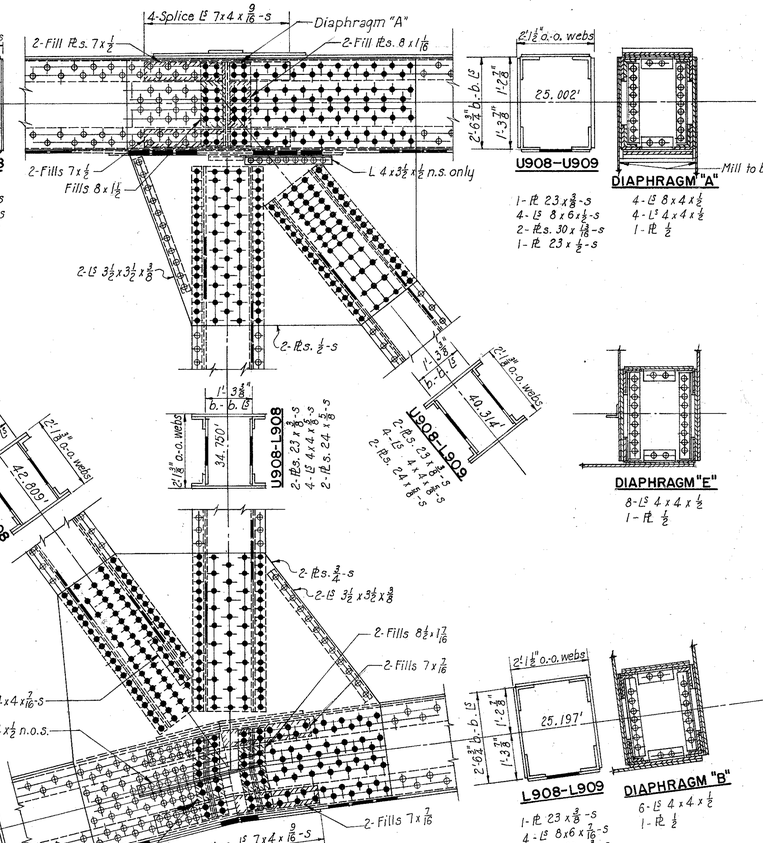


U905-U906
1-Pl. 22 x⅜-S
4-L⁵ 8 x 6 x ⅜-S
2-Pls. 30 x 11/16-S
2-Pls. 14 x⅜-S
1-Pl. 22 x ½-S

U906-U907
1-Pl. 23 x⅜-S
4-L⁵ 8 x 6 x 7/16-S
2-Pls. 30 x⅜-S
2-Pls. 14 x⅜-S
1-Pl. 23 x ½-S



U907-U908
1-Pl. 23 x⅜-S
4-L⁵ 8 x 6 x 7/16-S
2-Pls. 30 x⅜-S
1-Pl. 23 x ½-S



U908-U909
1-Pl. 23 x⅜-S
4-L⁵ 8 x 6 x ½-S
2-Pls. 30 x 1/2-S
1-Pl. 23 x ½-S

DIAPHRAGM "A"
4-L⁵ 8 x 4 x ½
4-L⁵ 4 x 4 x ½
1-Pl. ½

DIAPHRAGM "E"
8-L⁵ 4 x 4 x ½
1-Pl. ½

U905-L906
2-Pls. 25 x⅜-S
4-L⁵ 4 x 4 x⅜-S
2-Pls. 23 x 5/16-S

U906-M906-L906
2-Pls. 25 x⅜-S
4-L⁵ 4 x 4 x⅜-S
4-L⁵ 4 x 4 x⅜-S, i.s. L906-M906
2-Pls. 23 x 5/16-S

U906-L907
2-Pls. 24 x⅜-S
4-L⁵ 4 x 4 x⅜-S
2-Pls. 23 x⅜-S

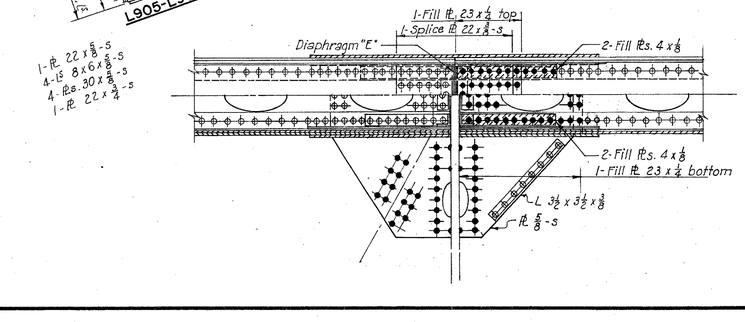
U907-M907-L907
2-Pls. 24 x⅜-S
4-L⁵ 4 x 4 x⅜-S
4-L⁵ 4 x 4 x⅜-S
M 907-L 907 only
2-Pls. 23 x⅜

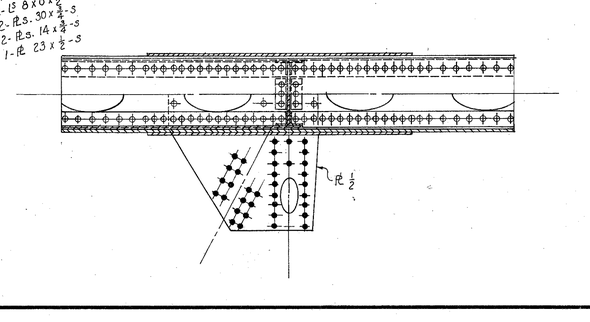
U907-L908
2-Pls. 24 x⅜-S
4-L⁵ 4 x 4 x⅜-S
2-Pls. 23 x⅜-S

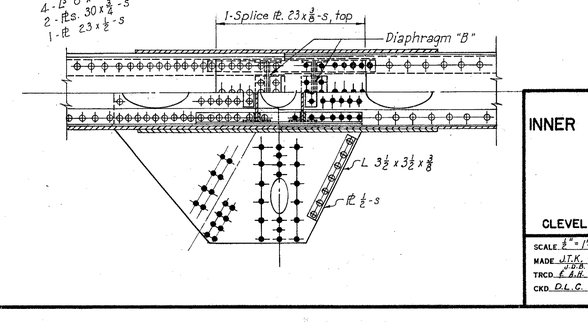
U908-L908
2-Pls. 23 x⅜-S
4-L⁵ 4 x 4 x⅜-S
4-L⁵ 4 x 4 x⅜-S
2-Pls. 24 x⅜-S

L908-L909
1-Pl. 23 x⅜-S
4-L⁵ 8 x 6 x 7/16-S
2-Pls. 30 x⅜-S
1-Pl. 23 x ½-S

DIAPHRAGM "B"
6-L⁵ 4 x 4 x ½
1-Pl. ½







PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5

TRUSS DETAILS, UNIT 9
PANELS 906, 907 AND 908

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½" = 1'-0"
MADE J.T.K. DATE 6-17-54
TRCD E.A.R. DATE 10-13-54
CKD D.L.C. DATE 9-22-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.92

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

91
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U-903

Fill Pl 12x1½
Fill Pl 12x1⅞
℄ Floorbeam

U 904

Fill Pl 12x⅝
Splice Pl 22 x ⅝ - S
Fill Pl 22 x ½ - S
Fill Pl 12x1½
Fill Pl 22x⅝-S
Splice Pl 11x¾ S - i.s.
Splice Pl 22 x ¾ - S
℄ Floor Beam
2-Splice Pls 30 x ¾ - S, i.s.
2-Splice Pls 14 x ¾ - S, i.s.
2-Splice Pls. 14 x ⅝ - S - i.s.
4-Splice L⃞s 7 x 4 x ⅞ - S
2 Fill Pls 30 x 1⅛ - S
2 Fill Pls 30 x ⅞ - S
4-Fill L⃞s 8x6 x ⅞ - S
Stop Main Member
Diaphragm "B"
Stop Main Member

U 905

Fill Pl 12x1½
Fill Pl 12x1⅞
℄ Floorbeam
Stop 2 Pls. 14 x ⅜ - S
Stop Pls 30 x 7/16 - S
Diaphragm "A"
2-Fills 16½ x ¼
10"ϕ Dia Hole

For details and connections of access walkway and ladders to piers, see Sheet 101.

U902-U903
4-L⃞s 8 x 6 x ⅝ - S
2-Pls 30 x 1 1/16 - S
1-Pl 22 x ⅜ - S
1-Pl 22 x ½ - S

L 902-U903
4-L⃞s 4 x 4 x ½ - S
2-Pls 28 x ⅝ - S
2-Pls 23 x ⅜ - S

U903-L903-L903
4-L⃞s 6 x 4 x ½ - S
4-L⃞s 4 x 4 x ⅜ - S (Below M 903)
2-Pls. 28 x ⅜ - S
2-Pls. 23 x 7/16 - S

L 903-U904
4-L⃞s 4 x 4 x ⅜ - S
2-Pls 28 x ⅜ - S
2-Pls 23 x ⅜ - S

U904-L905
4-L⃞s 4 x 4 x ⅜ - S
2-Pls 28 x ⅜ - S
2-Pls 23 x ⅜ - S

U904-M904-L904
4-L⃞s 7 x 4 x ⅜ - S
4-L⃞s 4 x 4 x ⅜ - S (Below M 904)
4-Pls 30 x ⅜ - S
2-Pls 22 x ⅜ - S

L 904-U905
4-L⃞s 8 x 6 x ⅝ - S
2-Pls 30 x 1 1/16 - S
2-Pls 30 x 7/16 - S
1-Pl 22 x ⅜ - S
1-Pl 22 x ½ - S

U905-M905-L905
4-L⃞s 6 x 4 x ¾ - S
(Below 905) 4-L⃞s 4 x 4 x ⅜ - S
2-Pls 28 x ⅜ - S
2-Pls 23 x 7/16 - S

U905-L906
4-L⃞s 4 x 4 x ½ - S
2-Pls 26 x ⅜ - S
2-Pls 23 x 7/16 - S

L 905-L906
4-L⃞s 8 x 6 x ⅝ - S
4-Pls 30 x ⅝ - S
1-Pl 22 x ¾ - S
1-Pl 22 x ¾ - S

U902-U903
4-L⃞s 8 x 6 x 5/8 - S
2-Pls 30 x 1 1/16 - S
1-Pl 22 x ⅝ - S
1-Pl 22 x ½ - S

DIAPHRAGM "A"
4-L⃞s 8 x 4 x ½
4 L⃞s 4 x 4 x ½
1 Pl x ½

U903-U904
4-L⃞s 8 x 6 x ⅝ - S
2-Pls 30 x 1 1/16 - S
2-Pls 30 x 7/16 - S
1-Pl 22 x ⅜ - S
1-Pl 22 x ½ - S

DIAPHRAGM "B"
1-20 I 65.4
2-Fills 6½ x ¼
2-L⃞s 6 x 4 x ½

L 4 x 3½ x ½ n.s. only
Slot in Gusset Pl
2-Pls s x ¾ - S
2-L⃞s 4 x 4 x ¾ - S
1-Fill Pl 28 x ⅜ - S - n.s.
2-L⃞s 4 x 4 x 7/16 - S
2-L⃞s 3½ x 3½ x ⅜
2-Pls s x ⅝ - S
2-Pls s x ¾ - S
2-L⃞s 3½ x 3½ x ⅜
2-Gusset Pls x ¾ - S
2-L⃞s 8 x 8 x ½ - S
Cut and Weld 2-L⃞s 8 x 6 x ½ s.i.s.
Fill Pl 8 x ½ - S
Stop Pl 22 x ⅝ - S
L 8 x 6 x ½ - S
Stop Pl 22 x ½ - S
Mill post and Gusset Pls. to bear
TS-2
1" ϕ h.s. bolt
Gusset Pl x ¾ - S
L 3½ x 3½ x ½
Fill 4 x 7/16
Mill joint to bear
L 4 x 4 x ½
℄ Bottom laterals
Diaphragm "C"
8-L⃞s 4 x 4 x ½
1-Pl 19 x ½
2-Fill Pls 8½ x ⅜

L 902-L903
4-L⃞s 8 x 6 x ⅝ - S
4-Pls 30 x ⅝ - S
1-Pl 22 x ⅜ - S
1-Pl 22 x ½ - S

L 903
2-Splice Pls 14 x ¾ - S i.s.
2-Splice L⃞s 14 x ¾ - S i.s.
2-Fill Pls 14 x ¾ - S
2-Fill Pls 7 x ⅜ - S
2-Splice Pls 30 x 7/16 - S
Mill Joint to bear
Fill 4 x 7/16
2-Fill Pls 4 x ¼ - S
Splice Pl 22 x ⅝ - S
2-Splice Pls. 6 x ⅜ - S
L 4 x 4 x ½
Pl x ½ - S
℄ Bottom Laterals

L 903-L904
4-L⃞s 8 x 6 x ⅝ - S
1-Pl 22 x ⅜ - S
1-Pl 22 x ½ - S

L 904
2-Fill Pls 8 x ½ - S
2-L⃞s 8 x 6 x ½ - S i.s.
L 8 x 6 x ½ - S
Stop Pl 22 x ⅝ - S
2'-0"
1'-4"

L 904-L905
4-L⃞s 8 x 6 x ⅝ - S
4-Pls 30 x ⅝ - S
1-Pl 22 x ¾ - S
1-Pl 22 x ¾ - S

L 905
2-Splice Pls 14 x ¾ - S i.s.
2-Splice L⃞s 7 x 4 x 7/16 - S
2-Splice Pls 30 x 7/16 - S
2-Splice Pls 14 x ½ - S
2-Fill Pls 11 x ½ - S
2-Splice Pls 30 x 1 1/16 - S
2-Fill Pls 22 x 1 1/16 - S
2-Fill Pls 4 x ½
2-Fill Pls 6 x 7/16
Spl. Pl 22 x ½ - S
Pl x ½ - S

Note: For details of top shoe casting TS-2 see Sheet 96.
Fill post with concrete up to line marked "Conc."
For diaphragms inside at joint L 904 see Sheets 33 and 34.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5
TRUSS DETAILS UNIT 9
PANELS 903, 904 AND 905
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½" = 1'-0"
MADE J.G.S. DATE 6-30-54
TRCD A.H. DATE 12-13-54
CKD. D.L.C. DATE 9-9-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.91

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

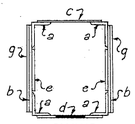
90
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

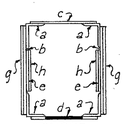
LINE	MEMBER		TENSION CHORD													COMPRESSION CHORD													
			U900 U901	U901 U902	U902 U903	U903 U904	U904 U905	U905 U906	U906 U907	L909 L910	L910 L911	L911 L912	L912 L913	L913 L914	L900 L901	L901 L902	L902 L903	L903 L904	L904 L905	L905 L906	L906 L907	L907 L908	L908 L909	U907 U908	U908 U909	U909 U910	U910 U911	U911 U912	U912 U913	U913 U914
1	Dead Load			+ 724	+ 1,360	+ 1,800	+ 1,676	+ 1,129	+ 511	+ 673	+ 1,101	+ 1,243	+ 1,126	+ 697	- 754	- 1418	- 1988	- 2445	- 2322	- 1775	- 1162	- 526	+ 108	- 107	- 668	- 1100	- 1242	- 1126	- 697		
2	0.8 Dead Load			+ 579	+ 1,088	+ 1,440	+ 1,341	+ 903	+ 409	+ 538	+ 881	+ 994	+ 901	+ 558	- 603	- 1134	- 1590	- 1956	- 1858	- 1420	- 930	- 421	+ 86	- 86	- 534	- 880	- 994	- 901	- 558		
3	Live Load + Imp. - Tension																													
4	Reduced L.L + Imp. - Tension			+ 195	+ 343	+ 426	+ 513	+ 541	+ 545	+ 649	+ 697	+ 639	+ 509	+ 288						+ 147	+ 296	+ 443	+ 577	+ 551	+ 505	- 448	+ 348	+ 241	+ 120		
5	Live Load + Imp. - Comp.																													
6	Reduced LL + Imp. - Comp.						- 139	- 287	- 429	- 509	- 448	- 348	- 241	- 120	- 203	- 358	- 470	- 545	- 521	- 544	- 557	- 562	- 556	- 572	- 643	- 696	- 638	- 509	- 288		
7	Reduced LL + Imp. - Ten. x D(CF)^e			+ 323	+ 568	+ 706	+ 850	+ 897	+ 903	+ 1,076	+ 1,155	+ 1,059	+ 844	+ 477						+ 244	+ 491	+ 734	+ 956	+ 913	+ 837	+ 742	+ 577	+ 399	+ 199		
8	Reduced LL + Imp. - Comp. x D(CF)^e						- 230	- 476	- 711	- 844	- 742	- 577	- 399	- 199	- 336	- 593	- 779	- 903	- 863	- 902	- 923	- 931	- 921	- 948	- 1066	- 1153	- 1057	- 844	- 477		
9	Ratio = $\frac{\text{Line 7}}{\text{Line 7 (comp.)}}$ or $\frac{\text{Line 8}}{\text{Line 7 (ten.)}}$						- 0.08	- 0.25	- 0.84	- 0.74	- 0.41	- 0.28	- 0.21	- 0.17						- 0.08	- 0.25	- 0.64	- 5.15	- 5.15	- 0.74	- 0.41	- 0.28	- 0.21	- 0.17		
10	LL Sidewalk - Tension			+ 9	+ 16	+ 21	+ 27	+ 29	+ 29	+ 34	+ 35	+ 32	+ 25	+ 14						+ 7	+ 15	+ 22	+ 29	+ 29	+ 27	+ 24	+ 18	+ 13	+ 6		
11	LL Sidewalk - Comp.						- 7	- 14	- 22	- 27	- 24	- 18	- 13	- 6	- 9	- 17	- 24	- 29	- 27	- 29	- 29	- 30	- 29	- 29	- 33	- 35	- 32	- 25	- 14		
12	Direct Design Stress			+ 911	+ 1,672	+ 2167	+ 2218	+ 1829	+ 1,341	+ 1,648	+ 2,071	+ 2,085	+ 1,770	+ 1,049	- 948	- 1744	- 2393	+ 2888	- 2748	- 2351	- 1882	- 1382	+ 1071	- 1063	- 1633	- 2068	- 2083	- 1700	- 1049		
13	Reverse Design Stress																						- 864	+ 856							
14																														
15																														
	MEMBER	Holes out for Tension																												
a	Angles	2	4 x 4 x 1/2	4 x 4 x 1/2	8 x 6 x 5/8	8 x 6 x 3/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 7/16	8 x 6 x 7/16	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 1/16	8 x 6 x 7/16	8 x 6 x 7/16	8 x 6 x 7/16	8 x 6 x 1/2	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 7/8	8 x 6 x 7/16	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 7/16	8 x 6 x 7/16	
b	I. Web Plate	4	30 x 3/8	30 x 3/8	30 x 1/16	30 x 1/16	30 x 1/16	30 x 1/16	30 x 3/8	30 x 3/8	30 x 3/4	30 x 3/4	30 x 3/8	30 x 3/8	30 x 3/8	30 x 3/8	30 x 5/8	30 x 5/8	30 x 3/4	30 x 5/8	30 x 3/4	30 x 3/4	30 x 3/8	30 x 1/8	30 x 13/16	30 x 13/16	30 x 13/16	30 x 13/16	30 x 3/8	30 x 3/8	
c	Top Plate	3	23 x 3/16	23 x 3/16	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	23 x 3/8	23 x 3/8	22 x 3/8	22 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 1/16	22 x 5/8	22 x 5/8	22 x 5/8	22 x 5/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	
d	Bottom Plate	2	23 x 3/8 *)	23 x 3/8 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	22 x 1/2 *	22 x 1/2 *	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	22 x 3/4 **)	22 x 3/4 **)	22 x 3/4 **)	22 x 3/4 **)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	23 x 1/2 *)	
e	I. Inside Web Plate	2						14 x 3/8	14 x 1/2	14 x 3/4	14 x 1/2	14 x 1/2				14 x 7/16					14 x 3/4					14 x 3/16	14 x 3/16			
g	2. Outside Web Plate	4				30 x 7/16	30 x 7/16						30 x 7/16			30 x 3/8	30 x 5/8	30 x 3/4	30 x 3/4	30 x 5/8										
h	2. Inside Web Plate	2																												
25	Length	In.													308.9"	312.7"	331.1"	353.6"	316.6	317.9"	309.3"	309.3"		300"	300"	300"	300"	300"	300"	300"
26	Minimum Radius of Gyration	In.													10.63	10.84	10.90	10.80	10.80	10.90	10.53	11.20		10.95	11.18	10.68	10.68	11.18	10.95	10.95	
27	Allowable Stress	Lbs./Sq.In.	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	19,610	19,620	19,570	19,510	19,600	19,610	19,600	19,650	24,000 t	19,650	19,670	19,640	19,640	19,670	19,650	19,650	
28	Actual Gross Area	Sq.In.	49.19	49.19	86.44	114.69	114.69	98.94	74.85	61.85	99.75	99.75	87.10	60.85	60.85	95.60	131.19	158.67	158.67	131.19	107.63	86.63	60.85	60.85	90.38	106.13	106.13	90.38	60.85	60.85	
29	Net Area	Sq.In.	40.50	40.50	75.82	98.57	98.57	84.82	64.22	70.22	85.63	85.63	74.98	52.22	54.28	95.22	131.19	158.67	158.67	131.19	107.25	86.25	52.22	54.01	90.05	105.80	105.80	90.05	54.01	54.01	
30	Actual Unit Stress	Lbs./Sq.In.		22,500	22,050	21,980	22,500	21,560	20,880	23,470	24,190 $^{0.5}/_{8.5}$	24,350 $^{1.5}/_{8.5}$	23,610	20,090	17,470	18,320	18,240	18,210	17,330	17,920	17,550	16,020	20,500 t	19,680	18,140	19,550	19,690	19,660	19,420		
31	Material		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
					(x)	(x)	(x)	(x)	(x)							(x)	(x)	(x)	(x)	(x)	(x)										

LINE	MEMBER	TENSION WEB MEMBERS													COMPRESSION WEB MEMBERS															
		L900 U901	L901 U902	L902 U903	L903 U904	L904 L905	L905 L906	L906 L907	U907 L908	L908 L909	U909 L910	U910 L911	U911 L912	U912 L913	U901 L901	U902 M902	M902 L902	U903 M903	M903 L903	U904 M904	M904 L904	U905 M905	M905 L905	U906 M906	M906 L906	U907 M907	M907 L907	U908 L908	U909 L909	U910 L910	U911 L911	U911 L912	U912 L913	U913 L914	U914 L914
1	Dead Load	+ 1063	+ 1072	+ 850	+ 680	+ 840	+ 935	+ 950	+ 846	+ 725	+ 524	+ 169	+ 267	+ 487	- 898	- 991	- 1134	- 872	- 1015	- 1709	- 1927	- 1178	- 1321	- 1162	- 1305	- 993	- 1136	- 836	- 616	- 289	+ 2	- 170	- 625	- 1010	- 98	
2	0.8 Dead Load	+ 850	+ 858	+ 680	+ 544	+ 840	+ 935	+ 950	+ 846	+ 725	+ 524	+ 169	+ 267	+ 487	- 718	- 793	- 907	- 698	- 812	- 1367	- 1543	- 942	- 1057	- 930	- 1044	- 794	- 909	- 669	- 493	- 231	+ 2	- 136	- 500	- 808	- 78	
3	Live Load + Imp. - Tension																																		
4	Reduced LL + Imp. - Tension	+ 282	+ 279	+ 215	+ 178	+ 334	+ 336	+ 310	+ 297	+ 228	+ 200	+ 190	+ 223	- 274						+ 54	+ 45	+ 52	+ 52	+ 7	+ 7	+ 9	+ 9	+ 23	+ 42	+ 111	+ 154	+ 172	+ 176	+ 177		
5	Live Load + Imp. - Comp.																																		
6	Reduced LL + Imp. - Comp.					- 118	- 59	- 9	- 10	- 47	- 78	- 186	- 128	- 128	- 222	- 239	- 285	- 200	- 249	- 354	- 395	- 311	- 353	- 275	- 324	- 249	- 306	- 186	- 157	- 142	- 125	- 251	- 349	- 422	- 36	
7	Reduced LL + Imp. - Ten. x D(CF)^e	+ 467	+ 462	+ 356	+ 295	+ 554	+ 557	+ 514	+ 492	- 378	+ 331	+ 315	+ 370	+ 434						+ 89	+ 76	+ 86	+ 86	+ 12	+ 12	+ 15	+ 15	+ 38	+ 70	+ 184	+ 255	+ 265	+ 292	+ 293		
8	Reduced LL + Imp. - Comp. x D(CF)^e					- 196	- 98	- 15	- 17	- 78	- 129	- 308	- 212	- 212	- 368	- 396	- 472	- 331	- 413	- 587	- 655	- 515	- 585	- 456	- 537	- 413	- 507	- 308	- 260	- 235	- 207	- 416	- 578	- 699	- 60	
9	Ratio = $\frac{\text{Line 7}}{\text{Line 7 (comp.)}}$ or $\frac{\text{Line 8}}{\text{Line 7 (ten.)}}$					- 0.11	- 0.05	- 0.008	- 0.01	- 0.05	- 0.12	- 0.88	- 0.39	- 0.21						- 0.03	- 0.03	- 0.04	- 0.04	- 0.00	- 0.00	- 0.01	- 0.00	- 0.03	- 0.05	- 0.38	- 62.5	- 1.01	- 0.28	- 0.17		
10	LL Sidewalk - Tension	+ 13	+ 13	+ 10	+ 8	+ 17	+ 16	+ 14	+ 13	+ 12	+ 11	+ 11	+ 11	+ 14						+ 2	+ 2	+ 3	+ 3	0	0	0	0	+ 1	+ 1	+ 5	+ 7	+ 10	+ 9	+ 9		
11	LL Sidewalk - Comp.					- 6	- 3	- 0	- 1	- 2	- 3	- 8	- 7	- 7	- 11	- 12	- 14	- 10	- 12	- 20	- 22	- 15	- 17	- 13	- 15	- 12	- 14	- 11	- 9	- 8	- 7	- 11	- 16	- 21	- 1	
12	Direct Design Stress	+ 1330	+ 1333	+ 1046	+ 847	+ 1411	+ 1508	+ 1478	+ 1351	+ 1115	+ 866	+ 495	+ 648	+ 955	- 1097	- 1201	- 1393	- 1039	- 1237	- 1974	- 2220	- 1472	- 1659	- 1399	- 1596	- 1219	- 1430	- 988	- 772	- 474	- 264	- 563	- 1094	- 1528	- 139	
13	Reverse Design Stress																														- 212	+ 3			
14																																			
15																																			
	Section	Holes out for Tension																																	
a	Outer Angles	2	4 x 4 x 3/8	4 x 4 x 3/4	4 x 4 x 1/2	4 x 4 x 3/8	4 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/4	4 x 4 x 3/4	6 x 4 x 1/2	6 x 4 x 1/2	7 x 4 x 7/8	7 x 4 x 7/8	6 x 4 x 3/4	6 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 3/8	4 x 4 x 1/2	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/4	4 x 4 x 3/8	
b	I. Web Plates	3	24 x 3/16	24 x 3/16	26 x 3/8	28 x 1/2	26 x 3/4	26 x 7/8	24 x 7/8	24 x 3/4	24 x 3/4	24 x 3/8	24 x 3/8	24 x 1/2	24 x 3/4	26 x 3/4	26 x 3/4	28 x 5/8	28 x 3/8	30 x 5/8	30 x 3/8	28 x 3/8	28 x 7/8	28 x 7/8	26 x 7/8	24 x 3/4	24 x 3/4	24 x 3/4	24 x 1/2	24 x 7/8	24 x 3/8	24 x 3/8	24 x 5/8	24 x 1/16	24 x 1/2	24 x 3/8	
c	Cover Plates	2	23 x 7/16 **)	23 x 3/16 **)	23 x 3/8 **)	23 x 1/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	24 x 3/8 **)	23 x 3/8 **)	23 x 3/16 **)	23 x 7/16 **)	23 x 7/16 **)	23 x 3/8 **)	23 x 7/16 **)	23 x 3/8 **)	23 x 7/16 **)	23 x 7/16 **)	23 x 7/16 **)	23 x 7/16 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 3/8 **)	23 x 7/16 **)	23 x 3/8 **)	
e	Inner Angles	2									4 x 4 x 3/8		4 x 4 x 3/8								4 x 4 x 3/8		4 x 4 x 3/8		4 x 4 x 3/8		4 x 4 x 3/8								
g	2. Web Plates	3																		30 x 5/8	30 x 3/8													24 x 1/2		
25	Length	In.													408"	496"	496"	636"	636"	816"	816	672"	672"	567"	567"	492"	492"	417"	379.5"	342"	330"	437.2	437.2	439.87	318"	
26	Minimum Radius of Gyration	In.													7.67	7.99	7.77	8.54	8.25	9.08	8.92	8.58	8.28	7.96	7.75	7.75	7.55	7.14	7.71	7.70	7.70	7.70	7.70	7.63	7.70	
27	Allowable Stress	Lbs./Sq.In.	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000	24,000	24,000	18,700	18,120	18,120	17,270	17,270	16,160	16,160	17,180	17,180	17,540	17,540	18,050	18,050	18,670	18,890	19,090	14,540	18,520	18,520	16,470	14,570
28	Actual Gross Area	Sq.In.	72.14	72.14	57.25	49.19	73.51	77.01	73.51	67.51	58.19	45.19	39.19	39.19	49.50	64.19	72.14	83.58	65.36	76.82	125.44	136.88	88.14	99.58	78.64	90.08	67.51	78.95	58.19	48.75	39.19	39.19	39.19	61.19	81.14	39.19
29	Net Area	Sq.In.	59.52	59.52	46.75	40.69	60.01	62.51	60.76	55.51	47.94	37.69	32.44	32.44	40.00	64.19	72.14	83.58	61.78	76.82	125.44	136.88	88.14	99.58	78.64	90.08	67.51	78.95	54.50	42.09	31.33	31.33	31.33	59.64	81.14	31.33
30	Actual Unit Stress	Lbs./Sq.In.	22,340	22,340	22,370	20,810	23,510	24,120 $^{0.5}/_{8.5}$	24,300 $^{1.5}/_{8.5}$	24,340 $^{1.5}/_{8.5}$	23,260	22,980	15,250	19,980	23,880	17,090	16,650	16,680	16,810	16,100	15,740	16,200	16,700	16,660	17,180 $^{1.5}/_{8.5}$	17,720	18,060	18,110	18,130	18,130	15,130	6,650	17,960	18,340	18,830 $^{1.5}/_{8.5}$	4,360	
31	Material		S	S	S	S	S	S	S	S	S	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	C	S	S	S	S	C
					(x)	(x)										(x)	(x)	(x)																		

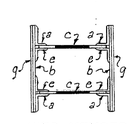
(x) Heavier Section = same as in Unit 9 North
x) Handhole 11" wide
xx) Handhole 10" wide
S = Special Steel
C = Carbon Steel



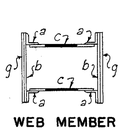
CHORD



CHORD



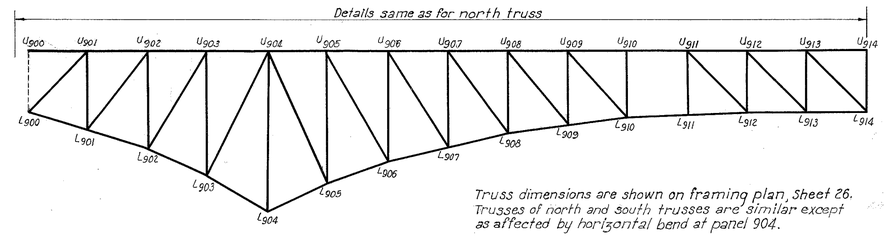
WEB MEMBER



WEB MEMBER

All live and dead load stresses.

Line 29, net area for tension or effective gross area for compression.



Truss dimensions are shown on framing plan, Sheet 26.
Trusses of north and south trusses are similar except as affected by horizontal bend at panel 904.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5

STRESS SHEET UNIT 9
SOUTH TRUSS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE H.W.C. DATE 5-11-53
TRCD. E.A.H. DATE 9-21-54
CKD. G.H.H DATE 9-22-54

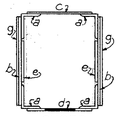
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

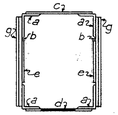
914-1A SHEET- 2.90

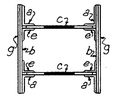
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

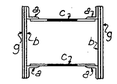
89
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT









LINE	MEMBER		TENSION CHORD U900 U901	U901 U902	U902 U903	U903 U904	U904 U905	U905 U906	U906 U907	L900 L910	L910 L911	L911 L912	L912 L913	L913 L914
1	Dead Load			+ 772	+ 1450	+ 1915	+ 1812	+ 1269	+ 652	+ 541	+ 984	+ 1153	+ 1065	+ 669
2	0.8 Dead Load			+ 618	+ 1160	+ 1532	+ 1450	+ 1015	+ 522	+ 433	+ 787	+ 922	+ 852	+ 535
3	Live Load + Imp. -Tension													
4	Reduced LL+Imp.-Tension			+ 210	+ 369	+ 458	+ 551	+ 581	+ 586	+ 651	+ 699	+ 641	+ 510	+ 288
5	Live Load + Imp. -Comp.													
6	Reduced LL+Imp.-Comp.						- 139	- 288	- 431	- 547	- 482	- 375	- 259	- 129
7	Reduced LL+Imp.-Ten. x D(CF)e			+ 348	+ 612	+ 759	+ 913	+ 963	+ 971	+1079	+1158	+1062	- 845	+ 477
8	Reduced LL+Imp.-Comp. x D(CF)e						- 230	- 477	- 714	- 906	- 799	- 621	- 429	- 214
9	Ratio"						- 0.08	- 0.23	- 0.66	- 1.01	- 0.49	- 0.323	- 0.243	- 0.193
10	LL Sidewalk - Tension			+ 9	+ 16	+ 21	+ 27	+ 29	+ 29	+ 34	+ 36	+ 32	+ 25	+ 14
11	LL Sidewalk - Comp.						- 7	- 14	- 22	- 27	- 24	- 18	- 13	- 6
12	Direct Design Stress			+ 975	+ 1788	+ 2312	+ 2390	+ 2007	+ 1522	+ 1546	+ 1981	+ 2016	+ 1722	+ 1026
13	Reverse Design Stress													
14														
15														
	SECTION	Holes out for Tension												
a	Angles	2	4x4x½	4x4x½	8x6x⅜	8x6x⅜	8x6x⅜	8x6x⅜	8x6x7/16	8x6x7/16	8x6x½	8x6x½	8x6x7/16	8x6x7/16
b	I. Web Plate	4	30x⅜	30x⅜	30x⅜	30x7/16	30x⅛	30x7/16	30x⅜	30x⅜	30x¼	30x⅜	30x⅜	30x⅜
c	Top Plate	3	23x⅜	23x⅜	22x⅜	22x⅜	22x⅜	22x⅜	23x⅜	23x⅜	22x⅜	22x⅜	23x⅜	23x⅜
d	Bottom Plate	2	23x⅜*)	23x⅜*)	22x½*)	22x½*)	22x½*)	22x½*)	23x½*)	23x½*)	22x½*)	22x½*)	23x½*)	23x½*)
e	I. Inside Web Plate	2						14x⅜	14x½	14x¾	14x½	14x½		
g	2. Outside Web Plate	4				30x7/16	30x7/16						30x1/16	
25	Length - In.													
26	Min. Radius of Gyration - In.													
27	Allowable Stress - Lbs./Sq. In.		24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Actual Gross Area - Sq. In.		49.19	49.19	88.44	114.69	114.69	98.94	74.85	81.85	99.75	99.75	87.10	60.85
29	Net Area - Sq. In.		40.50	40.50	75.82	98.57	98.57	84.82	64.22	70.22	85.63	85.63	74.98	52.22
30	Actual Unit Stress - Lbs./Sq. In.			24,050	23,580	23,420	24,250 | 1⅞	23,680	23,680	22,020	23,130	23,540	22,980	19,640
31	Material		S	S	S	S	S	S	S	S (x)	S (y)	S (x)	S	S

LINE	MEMBER		COMPRESSION CHORD L900 L901	L901 L902	L902 L903	L903 L904	L904 L905	L905 L906	L906 L907	L907 L908	L908 L909	U907 U908	U908 U909	U909 U910	U910 U911	U911 U912	U912 U913	U913 U914
1	Dead Load		- 805	- 1512	- 2114	- 2598	- 2480	- 1920	- 1308	- 673	- 36	+ 36	- 536	- 983	- 1152	- 1065	- 669	
2	0.8 Dead Load		- 644	- 1210	- 1691	- 2078	- 1984	- 1536	- 1046	- 538	- 29	+ 29	- 429	- 786	- 922	- 852	- 535	
3	Live Load + Imp. -Tension																	
4	Reduced LL+Imp.-Tension							+ 147	+ 297	+ 440	+ 578	+ 592	+ 543	+ 482	+ 374	+ 259	+ 129	
5	Live Load + Imp. -Comp.																	
6	Reduced LL+Imp.-Comp.		- 219	- 331	- 505	- 586	- 559	- 584	- 615	- 604	- 597	- 573	- 645	- 698	- 640	- 510	- 289	
7	Reduced LL+Imp.-Ten. x D(CF)e							+ 244	+ 492	+ 729	+ 958	+ 961	+ 900	+ 799	+ 620	+ 429	+ 214	
8	Reduced LL+Imp.-Comp. x D(CF)e		- 362	- 630	- 837	- 971	- 923	- 968	- 1019	- 1001	- 989	- 950	- 1069	- 1157	- 1061	- 845	- 479	
9	Ratio"							- 0.076	- 0.227	- 0.65	- 16.0	- 15.9	- 1.01	- 0.49	- 0.325	- 0.243	- 0.193	
10	LL Sidewalk - Tension							+ 7	+ 15	+ 22	+ 29	+ 29	+ 27	+ 24	+ 18	+ 13	+ 6	
11	LL Sidewalk - Comp.		- 9	- 17	- 24	- 29	- 28	- 29	- 30	- 30	- 29	- 29	- 33	- 36	- 32	- 25	- 14	
12	Direct Design Stress		- 1015	- 1857	- 2552	- 3078	- 2935	- 2533	- 2095	- 1569	- 1047	+ 1039	- 1531	- 1979	- 2015	- 1722	- 1028	
13	Reverse Design Stress										+ 958	- 950						
14																		
15																		
a	Angles	2	8x6x7/16	8x6x7/16	8x6x⅜	8x6x⅜	8x6x⅜	8x6x⅝	8x6x½	8x6x½	8x6x7/16	8x6x7/16	8x6x½	8x6x½	8x6x½	8x6x½	8x6x7/16	8x6x7/16
b	I. Web Plate	4	30x⅜	30x⅜	30x⅜	30x¾	30x¾	30x⅝	30x¼	30x¾	30x⅜	30x⅜	30x 13/16	30x 7/16	30x 13/16	30x 13/16	36x⅜	30x⅜
c	Top Plate	3	23x⅜	23x⅜	22x⅝	22x⅝	22x⅝	22x⅜	23x⅜	23x⅜	23x⅜	23x⅜	23x⅜	23x⅜	23x⅜	23x⅜	23x⅜	23x⅜
d	Bottom Plate	2	23x½*)	23x½*)	22x⅝**)	22x¾**)	22x¾**)	22x½*)	23x½*)	23x½*)	23x½*)	23x½*)	23x½*)	23x½*)	23x½*)	23x½*)	23x½*)	23x½*)
e	I. Inside Web Plate	2		14x7/16				14x⅞						14x 3/16	14x 3/16			
g	2. Outside Web Plate	4		30x⅜	30x⅜	30x¾	30x¾	30x⅝										
25	Length - In.		308.9"	312.7"	331.1"	363.5"	329.0"	317.9"	309.3"	309.3"	302.4"	300"	300"	300"	300"	300"	300"	300"
26	Min. Radius of Gyration - In.		10.63	10.84	10.90	10.80	10.80	10.90	10.53	11.20	10.95	10.95	11.18	10.68	10.68	11.18	10.95	10.95
27	Allowable Stress - Lbs./Sq. In.		19,610	19,620	19,570	19,480	19,570	19,610	19,600	19,650	19,650	19,650	19,670	19,640	19,640	19,670	19,650	19,650
28	Actual Gross Area - Sq. In.		60.85	95.60	131.19	158.67	158.67	131.19	107.63	86.63	60.85	60.85	90.38	106.13	106.13	90.38	60.85	60.85
29	Net Area - Sq. In.		54.28	95.22	131.19	158.67	158.67	131.19	107.25	86.25	54.01	54.01	90.05	105.80	105.80	90.05	54.01	54.01
30	Actual Unit Stress - Lbs./Sq. In.		18,700	19,500	19,420	19,390	18,500	19,300	19,520	18,180	19,390	17,580	17,000	18,710	19,050	19,090	19,030	
31	Material		S	S	S	S	S	S	S	S	S	S	S	S (x)	S (x)	S	S	S

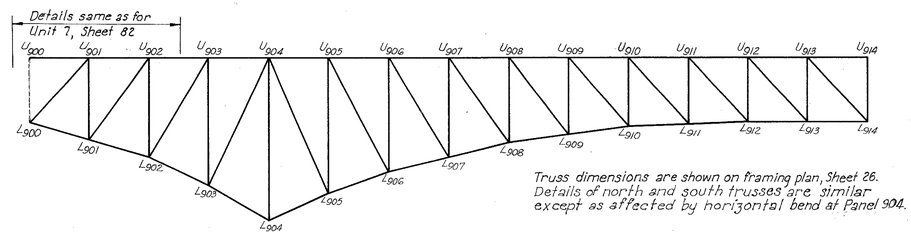
LINE	MEMBER		TENSION WEB MEMBERS L900 U901	L901 U902	L902 U903	L903 U904	U904 L905	U905 L906	U906 L907	U907 L908	U908 L909	U909 L910	U910 L911	U912 L912	U913 L913
1	Dead Load		+ 1138	+ 1143	+ 897	+ 755	+ 1038	+ 1160	+ 1183	+ 1055	+ 923	+ 678	+ 250	+ 298	+ 519
2	0.8 Dead Load		+ 910	+ 915	+ 718	+ 604	+ 830	+ 928	+ 946	+ 844	+ 738	+ 542	+ 200	+ 238	+ 463
3	Live Load + Imp. - Tension														
4	Reduced LL+Imp.-Tension		+ 305	+ 315	+ 227	+ 196	+ 335	+ 337	+ 310	+ 296	+ 231	+ 204	+ 184	+ 223	274
5	Live Load + Imp. - Comp.														
6	Reduced LL+Imp.-Comp.						- 119	- 63	- 9	- 13	- 47	- 79	- 187	- 141	- 137
7	Reduced LL+Imp.-Ten. x D(CF)e		+ 505	+ 522	+ 376	+ 325	+ 555	+ 559	+ 513	+ 494	+ 383	+ 338	+ 305	+ 370	+ 454
8	Reduced LL+Imp.-Comp. x D(CF)e						- 197	- 104	- 15	- 22	- 79	- 131	- 310	- 233	- 227
9	Ratio = Line 7 (Comp.) / Line 7 (Ten.) or Line 8 / Line 7						- 0.114	- 0.054	- 0.0	- 0.0	- 0.05	- 0.12	- 0.75	- 0.48	- 0.238
10	LL Sidewalk - Tension		+ 13	+ 13	+ 10	+ 8	+ 17	+ 16	+ 14	+ 13	+ 12	+ 11	+ 11	+ 11	+ 13
11	LL Sidewalk - Comp.						- 6	- 3	0	- 1	- 2	- 3	- 8	- 7	- 7
12	Direct Design Stress		+ 1428	+ 1450	+ 1104	+ 937	+ 1402	+ 1503	+ 1473	+ 1351	+ 1133	+ 891	+ 516	+ 619	+ 930
13	Reverse Design Stress														
14															
15															
	SECTION	Holes out for Tension													
a	Outer Angles	2	4x4x3/4	4x4x3/4	4x4x½	4x4x⅜	4x4x¾	4x4x¾	4x4x¾	4x4x¾	4x4x⅝	4x4x⅜	4x4x⅜	4x4x⅜	4x4x½
b	I. Web Plate	3	24x7/16	24x 13/16	26x⅝	28x½	28x¾	26x⅞	24x⅞	24x¾	24x⅜	24x½	24x⅜	24x⅜	24x½
c	Cover Plate	2	23x7/16**	23x7/16**	23x⅜**	23x⅜**	23x⅜**	23x⅞**	23x⅞**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	24x½**
e	Inner Angles	2													
g	2 Web Plate	3													
25	Length - In.														
26	Min. Radius of Gyration - In.														
27	Allowable Stress - Lbs./Sq. In.		24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000	24,000	24,000
28	Actual Gross Area - Sq. In.		72.14	72.14	57.25	49.19	73.51	77.01	73.51	67.51	58.19	45.19	39.19	39.19	49.50
29	Net Area - Sq. In.		59.52	59.52	46.75	40.69	60.01	62.51	60.76	55.51	47.94	37.69	32.44	32.44	40.00
30	Actual Unit Stress - Lbs./Sq. In.		23,970	24,320 | 1-5/16	23,600	23,000	23,370	24,000 | 0.2%	24,240 | 1.8%	24,340 | 1.2%	23,640	23,620	15,910	19,080	23,250
31	Material		S	S	S	S	S	S	S	S	S	S	C	S	S

LINE	MEMBER		COMPRESSION WEB MEMBERS L901 L901	L901 M902	M902 L902	L902 U903	U903 M903	M903 L903	L903 U904	U904 M904	M904 L904	L904 U905	U905 M905	M905 L905	L905 U906	U906 M906	M906 L906	L906 U907	U907 M907	M907 L907	L907 U908	U908 L908	U909 L909	U910 L910	U911 L911	U911 L912	U912 L913	U913 L914	U914 L914
1	Dead Load		- 967	- 1060	- 1202	- 919	- 1064	- 1784	- 1863	- 1175	- 1320	- 1056	- 928	- 1042	- 793	- 907	- 678	- 507	- 254	- 24	- 101	- 462	- 774	- 98					
2	0.8 Dead Load		- 774	- 847	- 962	- 735	- 851	- 1427	- 1490	- 940	- 1056	- 928	- 1160	- 1303	- 991	- 1134	- 848	- 634	- 318	- 30	- 126	- 577	- 968	- 98					
3	Live Load + Imp. - Tension																												
4	Reduced LL+Imp.-Tension							+ 45	+ 54	+ 56	+ 56	+ 8	+ 8	+ 9	+ 9	+ 23	+ 42	+ 111	+ 154	+ 177	+ 186	+ 188							
5	Live Load + Imp. - Comp.																												
6	Reduced LL+Imp.-Comp.		- 239	- 254	- 304	- 211	- 264	- 360	- 397	- 312	- 355	- 275	- 320	- 252	- 300	- 188	- 159	- 147	- 131	- 252	- 351	- 423	- 38					
7	Reduced LL+Imp.-Ten. x D(CF)e							+ 559	+ 513	+ 494	+ 383	+ 338	+ 305	+ 370	+ 454	+ 308	+ 293	+ 308	+ 312										
8	Reduced LL+Imp.-Comp. x D(CF)e		- 396	- 421	- 504	- 350	- 437	- 597	- 658	- 517	- 588	- 456	- 530	- 418	- 497	- 311	- 263	- 243	- 217	- 418	- 582	- 701	- 63					
9	Ratio = Line 7 (Comp.) / Line 7 (Ten.) or Line 8 / Line 7							- 0.025	- 0.024	- 0.048	- 0.042	- 0.00	0.0	- 0.01	- 0.0	- 0.026	- 0.065	- 0.33	- 486	- 1.40	- 0.32	- 0.19							
10	LL Sidewalk - Tension							+ 2	+ 2	+ 3	+ 3	0	0	0	0	+ 1	+ 2	+ 5	+ 7	+ 10	+ 10	+ 9							
11	LL Sidewalk - Comp.		- 11	- 12	- 14	- 10	- 12	- 21	- 23	- 15	- 18	- 13	- 15	- 12	- 14	- 11	- 9	- 8	- 7	- 11	- 17	- 21	- 1					
12	Direct Design Stress		- 1181	- 1280	- 1460	- 1095	- 1300	- 2045	- 2171	- 1472	- 1662	- 1397	- 1587	- 1223	- 1223	- 1000	- 779	- 505	- 248	- 530	- 1061	- 1496	- 142					
13	Reverse Design Stress																		+ 238	+ 112									
14																													
15																													
	SECTION	Holes out for Tension																											
a	Outer Angles	2	4x4x⅜	4x4x¾	4x4x¾	6x4x½	6x4x½	7x4x⅞	7x4x⅝	6x4x¾	6x4x¾	4x4x⅜	4x4x¾	4x4x¾	4x4x¾	4x4x¾	4x4x⅝	4x4x½	4x4x⅞	4x4x⅜	4x4x⅝	4x4x⅞	4x4x⅝	4x4x⅞	4x4x⅝	4x4x¾	4x4x⅞	4x4x⅞		
b	I. Web Plate	3	24x⅜	26x¾	26x¾	28x⅝	28x⅝	30x⅝	30x⅜	28x⅞	28x⅞	26x⅜	26x⅞	24x¾	24x¾	24x¾	24x⅝	24x½	24x⅞	24x⅜	24x⅞	24x⅞	24x⅜	24x⅞	24x⅜	24x⅞	24x⅞	24x⅞	24x½	24x⅞
c	Cover Plate	2	23x⅜**	23x7/16**	23x⅞*)	23x7/16**	23x⅞**	23x7/16**	22x⅝**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**	23x⅜**
e	Inner Angles	2			4x4x⅛		4x4x⅜		4x4x⅜		4x4x⅜		4x4x⅛		4x4x⅜														
g	2 Web Plate	3						30x⅝	30x⅜																			24x½	
25	Length - In.		408"	496"	496"	636"	636"	816"	816"	672"	672"	567"	567"	492	492"	417"	379.5"	342"	330"	437.2"	437.2"	439.87"	318"						
26	Min. Radius of Gyration - In.		7.67	7.99	7.77	8.54	8.25	9.08	8.92	8.58	8.28	7.96	7.75	7.75	7.55	7.74	7.71	7.70	7.70	7.70	7.70	7.63	7.70						
27	Allowable Stress - Lbs./Sq. In.		18,700	18,120	18,120	17,270	17,270	16,160	16,160	17,180	17,180	17,540	17,540	18,050	18,050	18,670	18,890	19,090	14,540	18,520	18,520	18,470	14,570						
28	Actual Gross Area - Sq. In.		64.19	72.14	83.38	65.38	76.82	125.44	136.88	88.14	99.38	78.64	90.08	67.51	78.95	58.19	48.75	39.19	39.19	39.19	61.19	81.14	39.19						
29	Net Area - Sq. In.		64.19	72.14	83.38	61.78	76.82	125.44	136.88	88.14	99.38	78.64	90.08	67.51	78.95	54.30	42.09	31.33	31.33	31.88	31.33	59.64	81.14	31.88					
30	Actual Unit Stress - Lbs./Sq. In.		18,400	17,130	17,000	17,320 | 5.8%	16,920	16,300	15,870	16,650	16,700	17,750 | 1.5%	17,600	18,120	17,960	18,350	18,500	16,120	7,460	16,910	17,800	18,540	4,450						
31	Material		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	C	S	S	S	C						

(x) Heavier Section - Same as in Unit 9 South
x) Handhole 11" wide
xx) Handhole 10" wide
S = Special Steel
C = Carbon Steel

All dead and live load stresses are in kips.

Line 29, net area for tension or effective gross area for compression.



Truss dimensions are shown on framing plan, Sheet 26. Details of north and south trusses are similar except as affected by horizontal bend at Panel 904.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
STRESS SHEET UNIT 9
NORTH TRUSS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE H.W.L. DATE 5-6-54
TRCD B.M.F.& E. DATE 5-24-54
CKD. G.H.H. DATE 7-24-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.89

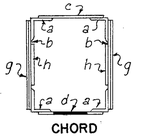
J16

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

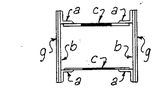
88
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

TENSION CHORD – SOUTH TRUSS						COMPRESSION CHORD – SOUTH TRUSS						LINE	MEMBER	TENSION CHORD – NORTH TRUSS							COMPRESSION CHORD – NORTH TRUSS						
L80 L81	L81 L82	L82 L83	L83 L84	L84 L85	L85 L86	U80 U81	U81 U82	U82 U83	U83 U84	U84 U85	U85 U86			L80 L81	L81 L82	L82 L83	L83 L84	L84 L85	L85 L86	U80 U81	U81 U82	U82 U83	U83 U84	U84 U85	U85 U86
0	+ 731	+ 1,222	+ 1,222	+ 731	0	- 731	- 1,221	- 1,445	- 1,445	- 1,221	- 731	1	Dead Load	0	+ 784	+ 1,312	+ 1,312	+ 784	0	- 783	- 1,311	- 1,550	- 1,550	- 1,311	- 783
0	+ 585	+ 978	+ 978	+ 585	0	- 585	- 977	- 1,156	- 1,156	- 977	- 585	2	0.8 Dead Load	0	+ 627	+ 1,050	+ 1,050	+ 627	0	- 626	- 1,049	- 1,240	- 1,240	- 1,049	- 626
0	+ 227	+ 366	+ 366	+ 277	0							3	Live Load + Impact - Tension	0	+ 246	+ 397	+ 397	+ 246	0						
0	+ 227	+ 366	+ 366	+ 277	0							4	Reduced L.L + Impact - Tension	0	+ 246	+ 397	+ 397	+ 246	0						
						- 227	- 366	- 407	- 407	- 366	- 227	5	Live Load + Impact - Comp.							- 246	- 397	- 441	- 441	- 397	- 246
						- 227	- 366	- 407	- 407	- 366	- 227	6	Reduced L.L. + Impact - Comp.							- 246	- 397	- 441	- 441	- 397	- 246
0	+ 376	+ 606	+ 606	+ 376	0							7	Red. L.L. + Imp. - Tension x D (CF) ^{e}	0	+ 408	+ 658	+ 658	+ 408	0						
						- 376	- 606	- 675	- 675	- 606	- 376	8	Red. L.L. + Imp. - Comp. x D (CF) ^{e}							- 408	- 658	- 731	- 731	- 658	- 408
												9	Ratio = Line 4 Line 1 Comp. or Line 6 Line 1 Tension												
0	+ 9	+ 15	+ 15	+ 9	0							10	L.L. Sidewalk - Tension	0	+ 10	+ 16	+ 16	+ 10	0						
						- 9	- 15	- 18	- 18	- 15	- 9	11	L.L. Sidewalk - Compression							- 10	- 16	- 19	- 19	- 16	- 10
0	+ 970	+ 1,599	+ 1,599	+ 970	0	- 970	- 1,598	- 1,849	- 1,849	- 1,598	- 970	12	Direct Design Stress ⑥+⑦+⑩ or ⑧+⑨+⑪	0	+ 1,045	+ 1,724	+ 1,724	+ 1,045	0	- 1,044	- 1,723	- 1,990	- 1,990	- 1,723	- 1,044
												13	Reverse Design Stress												
												14													
												15													
												16													
												17													
4 x 4 x 5/16	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 5/16	8 x 6 x 7/16	8 x 6 x 7/16	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 7/16	8 x 6 x 7/16		Section												
30 x 3/8	30 x 7/16	30 x 7/16	30 x 7/16	30 x 7/16	30 x 3/8	30 x 3/8	30 x 3/8	30 x 1/4	30 x 3/4	30 x 3/8	30 x 3/8		a Flange Angles 2	4 x 4 x 5/8	4 x 4 x 7/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 7/8	4 x 4 x 5/16	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 1/2
23 x 3/16	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/16	23 x 3/8	23 x 3/8	23 x 1/8	23 x 3/8	23 x 3/8	23 x 3/8		b 1st Web Plate 4	30 x 1/2	30 x 1/2	30 x 1/2	30 x 1/2	30 x 1/2	30 x 3/8	30 x 3/8	30 x 3/8	30 x 13/16	30 x 11/16	30 x 3/8	30 x 3/8
23 x 2 5/8 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 3/8 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)		c Top Cover Plate 3	23 x 3/4	23 x 3/8	23 x 3/8	23 x 3/8	23 x 3/8	23 x 5/16	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)
		30 x 1/2	30 x 1/2				30 x 3/8			30 x 3/8			d Bottom Cover Plate 2	23 x 3/4 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 3/8 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)	23 x 1/2 (11" Hole)
								14 x 3/8	14 x 3/8				g 2nd Web Plate 4			30 x 1/2	30 x 1/2								
													h Inside Web Plate 2									14 x 7/16	14 x 7/16		
													Holes out for Tension											30 x 7/16	
						300	300	300	300	300	300	25	Length In.							300"	300"	300"	300"	300"	300"
						10.63	11.19	11.00	11.00	11.19	10.63	26	Min. Radius of Gyration In.							10.59	11.18	10.84	10.84	11.18	10.59
18,000	24,000	24,000	24,000	24,000	18,000	19,630	19,670	19,660	19,660	19,670	19,630	27	Allowable Stress Lbs./Sq.In.	18,000	24,000	24,000	24,000	24,000	18,000	19,630	19,670	19,650	19,650	19,670	19,630
43.79	52.32	82.32	82.32	52.32	43.79	60.85	83.35	97.13	97.13	83.35	60.85	28	Actual Gross Area Sq. In.	43.79	56.07	86.07	86.07	56.07	43.79	64.13	90.38	102.83	102.63	90.38	64.13
36.60	43.69	69.69	69.69	43.69	36.60	54.28	82.97	96.75	96.75	82.97	54.28	29	Net Area Sq. In.	36.60	46.94	72.94	72.94	46.94	36.60	57.56	90.00	102.25	102.25	90.00	57.56
0	22,180	22,920	22,920	22,180	0	17,860	19,260	19,100	19,100	19,260	13,860	30	Actual Unit Stress Lbs./Sq.In.	0	22,250	23,360	23,360	22,250	0	18,150	19,150	19,460	19,460	19,150	18,150
C	S	S	S	S	C	S	S	S	S	S	S	31	Material	C	S	S	S	S	C	S	S	S	S	S	S



TENSION WEB MEMBERS – SOUTH TRUSS							COMPRESSION WEB MEMBERS – SOUTH TRUSS								LINE	MEMBER	TENSION WEB MEMBERS – NORTH TRUSS								COMPRESSION WEB MEMBERS – NORTH TRUSS							
U80 L81	U81 L82	U82 L83	U83 U84	L84 L85	U85 U86	L85	U80 L80	U81 L81	U82 L82	U83 L83	U84 L84	U85 L85	U86 L86			U80 L81	U81 L82	U82 L83	U83 U84	L84 L85	U85 U86	L85	U80 L80	U81 L81	U82 L82	U83 L83	U84 L84	U85 L85	U86 L86
+ 993	+ 654	+ 293	+ 293	+ 654	+ 993		- 736	- 547	- 298	- 118	- 298	- 547	- 809	1	Dead Load	+ 1,062	+ 705	+ 312	+ 312	+ 705	+ 1,062		- 804	- 596	- 332	- 139	- 332	- 596	- 876
+ 794	+ 523	+ 234	+ 234	+ 523	+ 794		- 591	- 438	- 238	- 94	- 238	- 438	- 647	2	0.8 Dead Load	+ 850	+ 564	+ 250	+ 250	+ 564	+ 850		- 643	- 477	- 266	- 111	- 266	- 477	- 701
+ 308	+ 226	+ 146	+ 146	+ 226	+ 308				+ 15		+ 15			3	Live Load + Impact - Tension	+ 334	+ 245	+ 158	+ 158	+ 245	+ 334				+ 16		+ 16		
+ 308	+ 226	+ 146	+ 146	+ 226	+ 308				+ 15		+ 15			4	Reduced L.L. + Impact - Tension	+ 334	+ 245	+ 158	+ 158	+ 245	+ 334				+ 16		+ 16		
	- 19	- 54	- 54	- 19			- 219	- 164	- 103	- 47	- 103	- 164	- 224	5	Live Load + Impact - Comp.		- 21	- 58	- 58	- 21			- 237	- 178	- 111	- 51	- 111	- 178	- 244
	- 19	- 54	- 54	- 19			- 219	- 164	- 103	- 47	- 103	- 164	- 221	6	Reduced L.L. + Impact - Comp.		- 21	- 58	- 58	- 21			- 237	- 178	- 111	- 51	- 111	- 178	- 240
+ 510	+ 374	+ 242	+ 242	+ 374	+ 510				+ 25		+ 25			7	Reduced L.L. + Imp. - Tension x D (CF) ^{e}	+ 553	+ 406	+ 262	+ 262	+ 406	+ 553				+ 26		+ 26		
	- 31	- 89	- 89	- 31			- 363	- 272	- 171	- 78	- 171	- 272	- 366	8	Reduced L.L. + Imp. - Comp. x D (CF) ^{e}		- 35	- 96	- 96	- 35			- 393	- 295	- 184	- 85	- 184	- 295	- 398
	- 0.029	- 0.184	- 0.184	- 0.029					- 0.020		- 0.020			9	Ratio = Line 4 Line 1 Comp. or Line 6 Line 1 Tension		0.030	0.186	0.186	0.030					- 0.048		- 0.048		
+ 12	+ 9	+ 5	+ 5	+ 9	+ 12				+ 1		+ 1			10	L.L. Sidewalk - Tension	+ 13	+ 9	+ 6	+ 6	+ 9	+ 13								
		- 2	- 2				- 10	- 7	- 4	- 1	- 4	- 7	- 10	11	L.L. Sidewalk - Compression		- 0.4	- 2	- 2	- 0.4			- 10	- 7	- 4	- 1	- 4	- 7	- 10
+ 1.316	+ 906	+ 481	+ 481	+ 906	+ 1.316		- 964	- 717	- 413	- 173	- 413	- 717	- 1023	12	Direct Design Stress ⑥+⑦+⑩ or ⑧+⑨+⑪	+ 1,416	+ 979	+ 518	+ 518	+ 979	+ 1,416		- 1046	- 779	- 454	- 197	- 454	- 779	- 1109
													13 Reverse Design Stress																	
													14																	
													15																	
													16																	
													17																	
													Section																	
4 x 4 x 1/2	4 x 4 x 1/2	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 1/2	4 x 4 x 1/2		4 x 4 1/2	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 1/2	4 x 4 x 1/2		a. Flange Angles 2	4 x 4 x 1/2	4 x 4 x 1/2	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 1/2	4 x 4 x 1/2		4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8
24 x 7/16	24 x 7/16	24 x 3/8	24 x 3/8	24 x 7/16	24 x 7/16		24 x 7/16	24 x 1/2	24 x 3/4	24 x 3/8	24 x 3/8	24 x 1/2	24 x 11/16		b. 1st Web Plate 3	24 x 1/2	24 x 1/2	24 x 3/8	24 x 3/8	24 x 1/2	24 x 1/2		24 x 3/4	24 x 9/16	24 x 1/8	24 x 3/8	24 x 3/8	24 x 3/8	24 x 3/4
22 x 7/16 (10" Hole)	23 x 7/16 (10" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (10" Hole)	23 x 7/16 (8" Hole)	22 x 7/16 (10" Hole)		23 x 3/8 (10" Hole)	23 x 3/8 (10" Hole)	23 x 3/8 (10" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (10" Hole)		c. Cover Plates 2	22 x 3/8 (10" Hole)	23 x 7/16 (10" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (10" Hole)	23 x 7/16 (8" Hole)	22 x 3/8 (10" Hole)		23 x 3/8 (10" Hole)	23 x 3/8 (10" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (8" Hole)	23 x 3/8 (10" Hole)	23 x 3/8 (10" Hole)
24 x 7/16					24 x 7/16										g. 2nd Web Plate 3	24 x 1/2					24 x 1/2								
															Holes out for Tension															
							320	276	264	252	264	276	320	25	Length In.								320	276	264	252	264	276	320
							7.60	7.60	7.70	7.70	7.70	7.60	7.60	26	Min. Radius of Gyration In.								7.47	7.56	7.70	7.70	7.70	7.56	7.47
24,000	24,000	18,000	18,000	24,000	24,000		19,180	19,390	14,700		14,700	19,390	19,180	27	Allowable Stress Lbs./Sq.In.	24,000	24,000	18,000	18,000	24,000	24,000		19,150	19,390	14,700		14,700	19,390	19,150
67.50	47.38	39.19	39.19	47.38	67.50		57.75	45.19	39.19	39.19	39.19	45.19	57.75	28	Actual Gross Area Sq. In.	72.00	50.38	39.19	39.19	50.38	72.00		57.19	48.19	39.19	39.19	39.19	48.19	57.19
56.50	39.01	32.44	32.44	39.01	56.50		56.20	38.52	31.88	31.88	31.88	38.52	56.20	29	Net Area Sq. In.	60.50	41.63	32.44	32.44	41.63	60.50		57.19	42.79	31.88	31.88	31.88	42.79	57.19
23,270	23,230	14,820	14,820	23,230	23,270		17,150	18,610	12,950	5,420	12,950	18,610	18,220	30	Actual Unit Stress Lbs./Sq.In.	23,410	23,500	15,960	15,690	23,500	23,410		18,290	18,200	14,240	6,180	14,240	18,200	19,390
S	S	C	C	S	S		S	S	C	C	C	S	S	31	Material	S	S	C	C	S	S		S	S	C	C	C	S	S

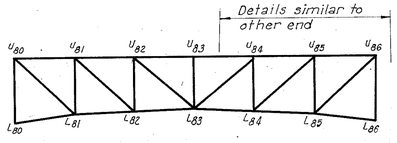


S = Special Steel
C = Carbon Steel

All dead and live load stresses are in kips.

Line 29, net are for tension or effective gross area for compression.

All details are the same as for the respective truss of Unit 6 except as modified by grades. See Sheets 28 and 29.



Truss dimensions are shown on framing plan, Sheet 25.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17.5
STRESS SHEET UNIT 8
NORTH AND SOUTH TRUSSES
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE D.M.C. DATE 5-4-54
TRCD E.A.H. DATE 5-17-54
CKD. H.W.L. DATE 5-19-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.88

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

87
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U702

U701

U700

DIAPHRAGM "B"
4 Lβ 8×4×½
4 Ls 4×4×½
1 Pl. ½

DIAPHRAGM "C"
2 Lβ 8×4×½ n.s.
2 Lβ 8×6×½ f.s.
4 Lβ 4×4×½
4 Fills 8×½
1 Pl. ½

U703 – U702
4 Lβ 8×6×½-s
2 Pls. 30×⅞-s
1 Pl. 22×⅞-s
1 Pl. 22×½-s

U702 – U701
4 Lβ 4×4×½-s
2 Pls. 30×⅞-s
1 Pl. 23×⅞-s
1 Pl. 23×⅜-s

U701 – U700
4 Lβ 4×4×½-s
2 Pls. 30×⅞-s
1 Pl. 23×⅞-s
1 Pl. 23×⅜-s

DIAPHRAGM "A"
8 Lβ 4×4×½
1 Pl. ½

DIAPHRAGM "G"
4 Lβ 4×4×½
4 Ls 4×4×½
2 Fills 9×½
1 Pl. 20×½

L703 – L702
4 Lβ 8×6×½-s
4 Pls. 30×⅞-s
1 Pl. 22×⅞-s
1 Pl. 22×½-s

L702

L702 – L701
4 Lβ 8×6×7/16-s
4 Pls. 30×⅞-s
2 Pls. 14×⅞-s
1 Pl. 23×⅞-s
1 Pl. 23×½-s

L701

L701 – L700
4 Lβ 8×6×7/16-s
2 Pls. 30×⅞-s
1 Pl. 23×⅞-s
1 Pl. 23×⅜-s

DIAPHRAGM "F"
4 Lβ 4×4×½-bent
2 Ls 4×4×½
1 Pl. ½-bent

DIAPHRAGM "E"
4 Lβ 4×4×½
4 Ls 4×4×½
1 Pl. ½

L700

DIAPHRAGM "D"
3 Lβ 4×4×⅜
2 Fills 4×7/16
1 Fill 4×⅜
1 Pl. 22×7/16-bent
1 Fill 11×7/16

DETAIL "A"
Scale: 1"=1'-0"

Notes:
For Pin Detail, see Sheet 70.
For Link Detail, see Sheet 78.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU-42R-17 5
TRUSS DETAILS, UNIT 7 SOUTH
PANELS 702, 701 AND 700
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½"=1'-0"
MADE W.A.M. DATE 6-2-54
TRCD W.A.M. DATE 6-2-54
CKD. J.G.S. DATE 10-13-54

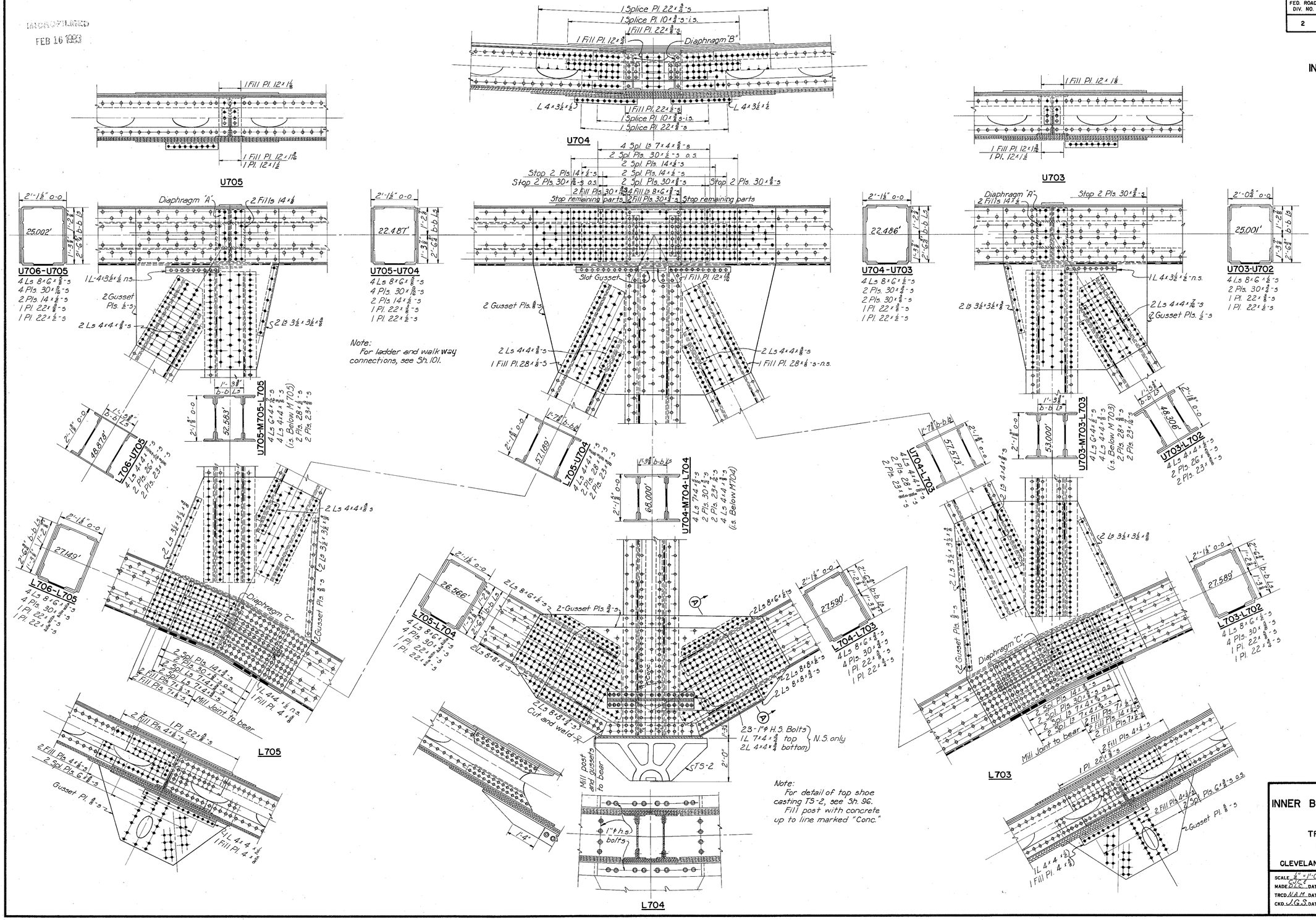
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.87

239

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

86
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17.5

TRUSS DETAILS, UNIT 7 SOUTH
PANELS 705, 704 AND 703

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3/4"=1'-0"
MADE D.L.C. DATE 7-16-54
TRCD N.A.M. DATE 7-26-54
CKD J.G.S. DATE 10-19-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.86

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

85
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U709

1 Pl. 12"x1½"
1 Fill Pl. 12"x1⅛"

U708

4 Splice Ls 7"x4"x⅜"-S
4 Fills 4"x⅝"
1 Splice Pl. 22"x⅝"-S bottom
2 Spl. Pls. 30"x⅝"-S o.s.
1 Spl. Pl. 10"x⅝"-S, I.S.
1 Spl. Pl. 22"x⅝"-S
1 Fill Pl. 12"x⅛"
1L 4"x3½"x½"

U707

1 Pl. 12"x1½"
1 Fill Pl. 12"x1⅛"
1L 4"x3½"x½"

U706

1 Spl. Pl. 22"x⅝"-S
1 Pl. 12"x1½"
1 Fill Pl. 12"x⅛"
1 Spl. Pl. 10"x⅝"-S, I.S. top
1 Spl. Pl. 22"x⅝"-S

Diaphragm "A"
2 Fills 14"x⅜"
2'-1½" o-o
25.002'
1'-3⅜" / 2'-6⅜" b-b L.S.
2 Ls 3½"x3½"x⅜"
2-Gusset Pls. ½"-S

U710-U708
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
2 Pls. 14"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S

Cut all main members
4 Fills 7"x⅝"
2 Splice Pls. 14"x1"-S
2-Gusset Pls. ⅜"-S
1L 4"x3½"x½" n.s.
1 Fill Pl. 12"x⅛"
1 Pl. 12"x1½"

U708-U707
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
2 Pls. 14"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S

2-Gusset Pls. ½"-S

U707-U706
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
2 Pls. 14"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S

Cut all main members
4 Spl. Ls 7"x4"x⅜"-S
2 Spl. Pls. 14"x⅜"-S
2 Spl. Pls. 30"x⅜"-S
2 Fill Pls. 14"x⅜"-S
1 Pl. 12"x⅛"
Diaphragm "A"

U706-U705
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
2 Pls. 14"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S

2-Gusset Pls. ¾"-S

U709-L709
4 Ls 4"x4"x½"
2 Pls. 24"x⅜"
2 Pls. 23"x⅜"
32.667'

U709-U708
4 Ls 4"x4"x½"
2 Pls. 24"x⅜"
2 Pls. 23"x⅜"
41.136'

U708-L708
4 Ls 4"x4"x½"
2 Pls. 24"x⅜"
2 Pls. 23"x⅜"
32.667'

L708-U707
4 Ls 4"x4"x½"
2 Pls. 24"x⅜"
2 Pls. 23"x⅜"
41.136'

U707-L707
4 Ls 4"x4"x½"
2 Pls. 24"x⅜"
2 Pls. 23"x⅜"
37.333'

L707-U706
4 Ls 4"x4"x½"
2 Pls. 24"x⅜"
2 Pls. 23"x⅜"
44.932'

U706-M706-L706
4 Ls 4"x4"x½"
2 Pls. 26"x⅜"
2 Pls. 23"x⅜"
4 Ls 4"x4"x½"
(I.S. M706-L706 only, see Sh. 31 for cut off point)
42.000'

L706-U705
4 Ls 4"x4"x½"
2 Pls. 26"x⅜"
2 Pls. 23"x⅜"
48.878'

L710-L708
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S

L708-L707
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S

L707-L706
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
2 Pls. 14"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S

L706-L705
4 Ls 8"x6"x⅝"-S
4 Pls. 30"x⅜"-S
1 Pl. 22"x⅝"-S
1 Pl. 22"x½"-S
27.149'

L709
2 Gusset Pls. ½"-S
Diaphragm E
2 Fills 8½"x⅝"
10"ϕ handhole
1L 4"x4"x½"
1 Pl. ½"-S

L708
2-Gusset Pls. ¾"-S
2 Ls 3½"x3½"x⅝"
2 Fills 8½"x⅝"
2 Bars 6"x⅞"-S o.s.
Diaphragm F
2 Spl. Pls. 30"x⅝"-S
4 Spl. Ls 7"x4"x⅜"-S
2 Spl. Pls. 14"x⅜"-S
Cut all main members
2 Fills 6"x½"
Splice Pl. 22"x⅝"-S
10"ϕ handhole
1 Pl. ½"-S
1L 4"x4"x½"

L707
2-Gusset Pls. ½"-S
2 Ls 3½"x3½"x⅝"
2 Fills 8½"x⅝"
2 Clip Ls 4"x4"x⅝"-S
Diaphragm F
Stop 2 Pls. 14"x⅜"-S
10"ϕ handhole
1 Pl. ½"-S
1L 4"x4"x½"

L706
2-Gusset Pls. ¾"-S
2 Ls 3½"x3½"x⅝"
2 Clip Ls 4"x4"x⅝"-S
2 Fills 6½"x½"-S
2 Fills 14"x⅜"-S
2 Fills 6½"x½"-S
Diaphragm E
2 Spl. Pls. 30"x⅝"-S
2 Spl. Pls. 14"x⅜"-S
4 Spl. Ls 7"x4"x⅜"-S
Cut all main members
2 Fills 8½"x⅝"
1 Spl. Pl. 22"x⅝"-S top
1 Pl. ⅝"-S

Note: For details of Diaphragm "A", see Sh. 86.
For details of Diaphragms "E" and "F", see Sh. 87.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17.5
TRUSS DETAILS UNIT 7 - SOUTH
PANELS 709, 708, 707, 706
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ¾"=1'-0"
MADE V.E.S. DATE 7-16-54
TRCD. N.A.M. DATE 9-3-54
CKD. J.G.S. DATE 10-9-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.85

230

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

84
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U706

U707

U709

U705-U506
4-L5 8x6x3/4-S
4-Pls. 30x7/16-S
2-Pls. 14x7/16-S
1-Pl 22x3/8-S
1-Pl 22x5/8-S

U706-U707
4-L5 8x6x3/4-S
4-Pls. 30x7/16-S
2-Pls. 14x7/16-S
1-Pl 22x3/8-S
1-Pl 22x1/2-S

U707-U708
4-L5 8x6x3/4-S
4-Pls 30x7/16-S
2-Pls 14x7/16-S
1-Pl 22x3/8-S
1-Pl 22x1/2-S

U708-U709
4-L5 8x6x3/4-S
4-Pls.30x7/16-S
2-Pls.14x7/16-S
1-Pl. 22x3/8-S
1-Pl 22x1/2-S

U709-U710
4-L5 8x6x1/2-S
4-Pls.30x7/16-S
2-Pls.14x3/8-S
1-Pl 22x3/8-S
1-Pl 22x1/2-S

U705-L706
4-L5 8x6x5/8-S
4-Pls.30x3/8-S
2-Pls.14x5/8-S
1-Pl 22x3/8-S
1-Pl 22x1/2-S

U706-M706-L706
4-L5 4x4x3/8-S
2-Pls.26x3/8-S
2-Pls.23x3/8-S
4-L5 4x4x5/8-S (L1 Mod L100 only)

U706-L707
4-L5 4x4x3/8-S
2-Pls.24x7/16-S
2-Pls.23x3/8-S

U707-L708
4-L5 4x4x3/8-S
2-Pls.24x7/16-S
2-Pls.23x3/8-S

U708-L709
4-L5 4x4x3/8-S
2-Pls.24x7/16-S
2-Pls.23x3/8-S

U709-L709
4-L5 4x4x3/8-S
2-Pls.24x3/8
2-Pls.23x3/8

U709-L710
4-L5 4x4x3/8-S
2-Pls.24x3/8
2-Pls.23x3/8

L705-L706
4-L5 8x6x5/8-S
4-Pls.30x3/8-S
2-Pls.14x5/8-S
1-Pl 22x3/8-S
1-Pl 22x1/2-S

L706-L707
1-Pl 22x3/8-S
4-L5 8x6x13/16-S
4-Pls.30x1/2-S
1-Pl 22x1/4-S

L707-L708
4-L5 8x6x5/8-S
4-Pls.30x1/4-S
1-Pl 22x5/8-S
1-Pl 22x3/4-S

L708-L709
4-L5 8x6x5/8-S
4-Pls.30x1/2-S
1-Pl 22x5/8-S
1-Pl 22x3/4-S

L709-L710
4-L5 8x6x1/2-S
4-Pls.30x1/4-S
1-Pl 22x3/8-S
1-Pl 22x3/4-S

L706

L707

L708

L709

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
TRUSS DETAILS UNIT 7 - NORTH
PANELS 706, 707, 708, 709
CLEVELAND CUYAHOGA COUNTY, OHIO

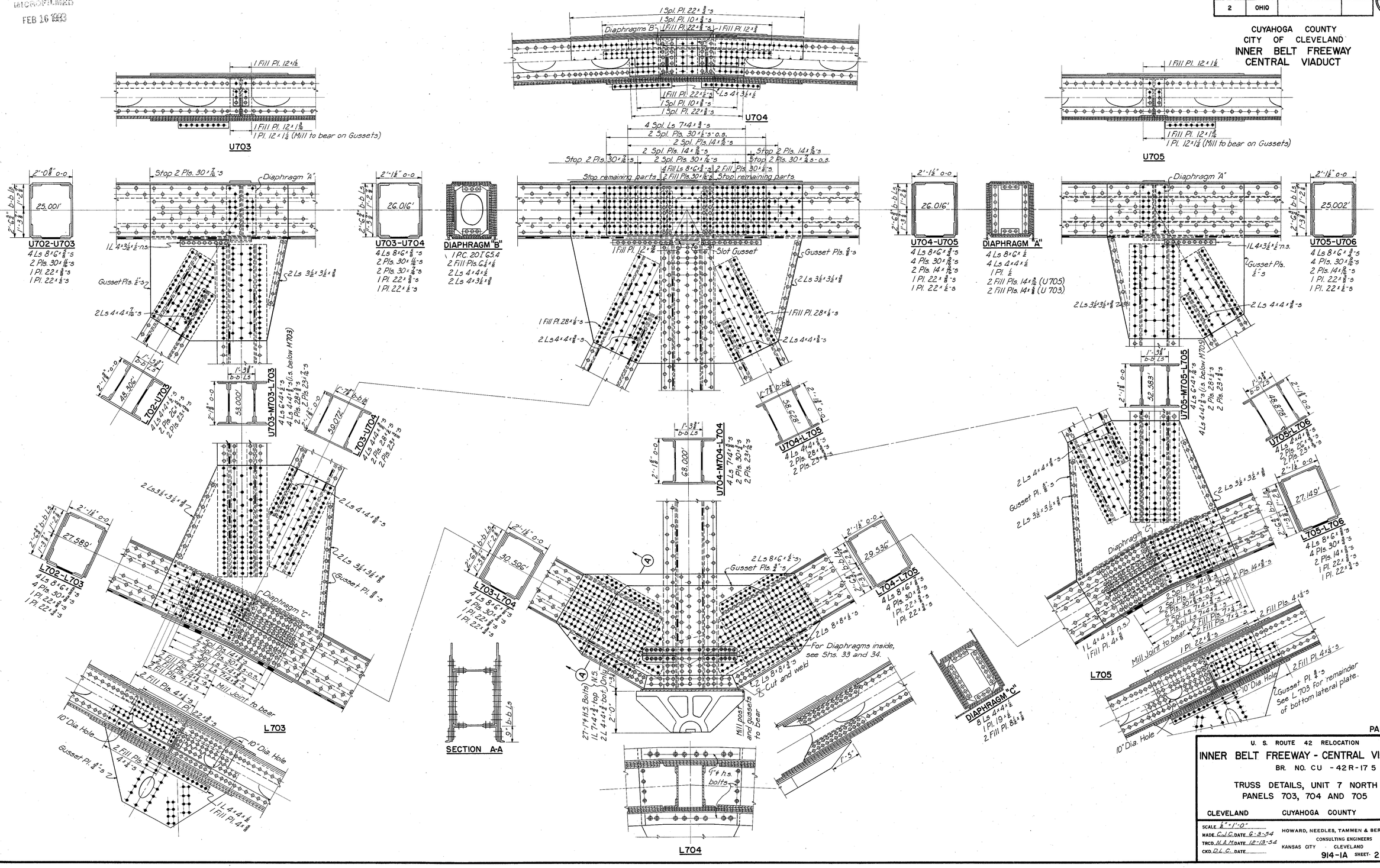
SCALE 1/4"=1'-0"
MADE R.F.A. DATE 7-12-54
TRCD. A.H. DATE 8-12-54
CKD. D.L.C. DATE 10-16-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.84

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

83
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5

TRUSS DETAILS, UNIT 7 NORTH
PANELS 703, 704 AND 705

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=1'-0"
MADE C.J.C. DATE 6-3-54
TRCD. N.A.M. DATE 12-13-54
CKD. D.L.C. DATE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.83

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

82
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U700

U701

U702

DIAPHRAGM "A"
8 L⊋ 4×4×⅜
1 Pl. 23×½

U700-U701
4 L⊋ 4×4×½-S
2 Pls. 30×⅜-S
1 Pl. 23×⅞-S
1 Pl. 23×⅜-S

U701 - U702
4 L⊋ 4×4×½-S
2 Pls. 30×⅜-S
1 Pl. 23×⅞-S
1 Pl. 23×⅜-S

U702 - U703
4 L⊋ 6×6×⅜-S
2 Pls. 30×½-S
1 Pl. 22×⅜-S
1 Pl. 22×½-S

DIAPHRAGM "C"
2 L⊋ 8×6×½-P.S.
2 L⊋ 8×4×½-n.s.
4 L⊋ 4×4×⅜
2 Fills 8×½
2 Fills 8×⅜
1 Pl. 21½×½

DIAPHRAGM "B"
4 L⊋ 8×4×½
4 L⊋ 4×4×½
2 Fills 16½×½
1 Pl. 23×½

DETAIL "A"
Scale: 1"=1'-0"

DIAPHRAGM "D"
Web Pl. 22×⅞-bent
3 L⊋ 4×4×⅜
2 Fills 4×⅞
1 Fill 4×⅜
1 Fill 11×⅞

DIAPHRAGM "E"
4 L⊋ 4×4×½
4 L⊋ 4×4×⅜
1 Pl. 22½×½
2 Fills 9×⅞

DIAPHRAGM "F"
4-L⊋ 4×4×½-bent
2-L⊋ 4×4×⅜
1-Pl 22×½-bent

L700-U701
4 L⊋ 4×4×½-S
2 Pls. 24×½-S
2 Pls. 23×⅜-S

U701 -L701
4 L⊋ 4×4×½-S
2 Pls. 24×½-S
2 Pls. 23×⅜-S

L701 -U702
4-L⊋ 4×4×½-S
2-Pls. 24×½-S
2-Pls. 23×⅜-S

U702 -M702 -L702
4 L⊋ 4×4×½-S
4 L⊋ 4×4×⅜-S (s. below M702)
2 Pls. 26×⅜-S
2 Pls. 23×⅜-S

L702 - U703
4 L⊋ 4×4×½-S
2 Pls. 26×⅜-S
2 Pls. 23×⅜-S

L700-L701
4 L⊋ 8×6×⅞-S
2 Pls. 30×⅜-S
1 Pl. 23×⅜-S
1 Pl. 23×½-S

L701 - L702
4 L⊋ 8×6×⅝-S
4 Pls. 30×⅜-S
2 Pls. 14×⅞-S
1 Pl. 23×⅜-S
1 Pl. 23×½-S

L702 - L703
4 L⊋ 8×6×⅝-S
4 Pls. 30×½-S
1 Pl. 22×⅜-S
1 Pl. 22×½-S

DIAPHRAGM "G"
4 L⊋ 4×4×½
4 L⊋ 4×4×⅜
2 Fills 9×½
1 Pl. 20×½

L700

L701

L702

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 S
TRUSS DETAILS, UNIT 7 NORTH
PANELS 700, 701 AND 702
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=1'-0"
MADE CJC DATE 5-5-54
TRCD. DATE
CKD. DMD DATE 10-14-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.82

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

81
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

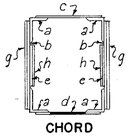
LINE	MEMBER		COMPRESSION CHORD																		
			L 700 / L 701	L 701 / L 702	L 702 / L 703	L 703 / L 704	L 704 / L 705	L 705 / L 706	L 706 / L 707	L 707 / L 708	L 708 / L 709	L 709 / L 710	L 710 / L 711	L 711 / L 712	L 712 / L 713	L 713 / L 714	L 714 / L 715	L 715 / L 716	L 716 / L 717	L 717 / L 718
1	Dead Load		-769	-1445	-2027	-2486	-2507	-2263	-2006	-1743	-1621	-1626	-1752	-2018	-2277	-2521	-2500	-2041	-1458	-775
2	0.8 Dead Load		-615	-1156	-1622	-1989	-2006	-1810	-1605	-1394	-1297	-1301	-1402	-1614	-1822	-2017	-2000	-1633	-1166	-620
3	Live Load + Imp. Tension																			
4	Reduced LL+Imp. Tension							+146	+317	+473	+603	+603	+473	+317	+146					
5	Live Load + Imp. Comp.																			
6	Reduced LL + Imp. Comp.		-209	-366	-484	-563	-567	-598	-619	-658	-717	-716	-654	-612	-590	-559	-557	-477	-362	-204
7	Reduced LL + Imp. Ten. x D(CF) [e]							+242	+526	+785	+1000	+1000	+785	+526	+242					
8	Reduced LL + Imp. Comp. x D(CF) [e]		-346	-606	-802	-933	-940	-991	-1025	-1091	-1188	-1187	-1084	-1014	-978	-926	-923	-791	-600	-338
9	Ratio = Line 4 / Line 5 (Comp.) or Line 6 / Line 5 (Ten.)							-0.06	-0.16	-0.27	-0.37	-0.37	-0.27	-0.16	-0.06					
10	L.L. Sidewalk - Tension							+7	+15	+23	+30	+30	+23	+15	+7					
11	L.L Sidewalk - Comp.		-9	-17	-24	-29	-29	-31	-32	-44	-50	-50	-44	-32	-31	-29	-29	-24	-17	-9
12	Direct Tension Stress		-970	-1779	-2448	-2951	-2975	-2832	-2662	-2529	-2535	-2538	-2530	-2660	-2831	-2972	-2952	-2448	-1783	-967
13	Reverse Design Stress																			
14																				
15																				
	SECTION	Holes out for Tension																		
a	Flange Angles	2	8 x 6 x 7/16	8 x 6 x 7/16	8 x 6 x 1/2	8 x 6 x 3/4	8 x 6 x 3/4	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 5/8	8 x 6 x 3/4	8 x 6 x 3/4	8 x 6 x 1/2	8 x 6 x 7/16	8 x 6 x 7/16
b	1st Web Plate	4	30 x 3/8	30 x 3/8	30 x 3/8	30 x 3/4	30 x 3/4	30 x 3/4	30 x 5/8	30 x 5/8	30 x 5/8	30 x 5/8	30 x 5/8	30 x 5/8	30 x 5/8	30 x 3/4	30 x 3/4	30 x 3/8	30 x 3/8	30 x 3/8
c	Top Cover Plate	3	23 x 3/8	23 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 3/8	22 x 1/8	22 x 3/8	22 x 3/8	22 x 3/8	23 x 3/8	23 x 3/8
d	Bottom Cover Plate	2	23 x 1/2 *)	23 x 1/2 *)	22 x 3/4 **)	22 x 3/4 **)	22 x 3/4 **)	22 x 3/4 **)	22 x 3/4 **)	22 x 3/4 **)	22 x 1/4 **)	22 x 1/4 **)	22 x 1/4 **)	22 x 3/4 **)	22 x 1/4 **)	22 x 3/4 **)	22 x 3/4 **)	23 x 1/2 *)	23 x 1/2 *)	
e	1st Inside Web Plate	2		14 x 3/8				14 x 3/8						14 x 3/8					14 x 3/8	
g	2nd Outside Web Plate	4		30 x 3/8	30 x 5/8	30 x 1/4	30 x 3/4	30 x 3/4	30 x 5/8	30 x 3/8	30 x 5/8	30 x 5/8	30 x 5/8	30 x 5/8	30 x 3/4	30 x 3/4	30 x 3/4	30 x 3/8	30 x 3/8	
h	2nd Inside Web Plate	2																		
25	Length	In.	316.3"	312.7"	331.1"	331.1"	334.0"	325.8"	305.2"	305.2"	300"	300"	305.2"	305.2"	325.8"	334.0"	331.1"	331.1"	312.7"	316.3"
26	Min. Radius of Gyration	In.	10.63	10.92	10.95	10.85	10.85	10.90	10.90	10.90	10.90	10.90	10.90	10.92	10.90	10.85	10.85	10.95	10.92	10.63
27	Allowable Stress	Lbs/Sq.In.	19,590	19,620	19,580	19,570	19,560	19,590	19,640	19,640	19,650	19,650	19,640	19,640	19,590	19,560	19,570	19,580	19,620	19,590
28	Actual Gross Area	Sq.In.	60.85	93.85	124.75	152.51	152.51	146.19	141.69	131.19	131.19	131.19	131.19	141.69	146.19	152.51	152.51	124.75	93.85	60.85
29	Net Area	Sq.In.	54.28	93.47	124.75	152.51	152.51	146.19	141.69	131.19	131.19	131.19	131.19	141.69	146.19	152.51	152.51	124.75	93.47	54.28
30	Actual Unit Stress	Lbs/Sq.In.	17,870	19,000	19,620	19,360	19,510	19,370	18,790	19,290	19,350	19,350	19,290	18,790	19,370	19,510	19,360	19,620	19,000	17,870
31	Material		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

LINE	MEMBER		TENSION CHORD																		
			U 700 / U 701	U 701 / U 702	U 702 / U 703	U 703 / U 704	U 704 / 705	U 705 / U 706	U 706 / U 707	U 707 / U 708	U 708 / U 709	U 709 / U 710	U 710 / U 711	U 711 / U 712	U 712 / U 713	U 713 / U 714	U 714 / U 715	U 715 / U 716	U 716 / U 717	U 717 / U 718
1	Dead Load			+ 738	+ 1386	+ 1836	+ 2083	+ 1971	+ 1713	+ 1621	+ 1510	+ 1510	+ 1626	+ 1723	+ 1983	+ 2096	+ 1849	+ 1398	+ 743	
2	0.8 Dead Load			+ 590	+ 1109	+ 1469	+ 1666	+ 1577	+ 1371	+ 1297	+ 1208	+ 1208	+ 1301	+ 1379	+ 1586	+ 1677	+ 1480	+ 1118	+ 594	
3	Live Load + Imp. - Tension																			
4	Reduced LL + Imp. - Tension			+ 200	+ 351	+ 440	+ 549	+ 608	+ 646	+ 717	+ 718	+ 718	+ 716	+ 644	+ 601	+ 542	+ 433	+ 347	+ 196	
5	Live Load + Imp. - Comp.																			
6	Reduced LL + Imp. - Comp.						- 133	- 311	- 464	- 603	- 619	- 619	- 603	- 464	- 311	- 133				
7	Reduced LL + Imp. Ten. x D(CF) [e]			+ 332	+ 582	+ 729	+ 910	+ 1008	+ 1071	+ 1188	+ 1190	+ 1190	+ 1187	+ 1067	+ 997	+ 898	+ 718	+ 575	+ 325	
8	Reduced LL + Imp. Comp. x D(CF) [e]						- 220	- 515	- 769	- 1000	- 1028	- 1028	- 1000	- 769	- 517	- 220				
9	Ratio = Line 4 / Line 5 (Comp.) or Line 6 / Line 5 (Ten.)						- 0.06	- 0.16	- 0.27	- 0.37	- 0.41	- 0.41	- 0.037	- 0.27	- 0.16	- 0.06				
10	L.L. Sidewalk - Tension			+ 9	+ 16	+ 22	+ 28	+ 31	+ 44	+ 50	+ 50	+ 50	+ 50	+ 44	+ 31	+ 28	+ 22	+ 16	+ 9	
11	L.L Sidewalk - Comp.						- 6	- 15	- 23	- 30	- 31	- 31	- 30	- 23	- 15	- 6				
12	Direct Tension Stress			+ 931	+ 1707	+ 2220	+ 2604	+ 2616	+ 2486	+ 2535	+ 2448	+ 2448	+ 2538	+ 2490	+ 2614	+ 2603	+ 2220	+ 1709	+ 928	
13	Reverse Design Stress																			
14																				
15																				
	SECTION	Holes out for Tension																		
a	Flange Angles	2	4 x 4 x 1/2	4 x 4 x 1/2	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 3/8	8 x 6 x 3/8	8 x 6 x 3/8	8 x 6 x 3/8	8 x 6 x 1/2	8 x 6 x 1/2	8 x 6 x 5/8	8 x 6 x 3/8	8 x 6 x 5/8	6 x 6 x 3/8	8 x 6 x 3/8	8 x 6 x 1/2	4 x 4 x 1/2	4 x 4 x 1/2
b	1st Web Plate	3	30 x 3/8	30 x 3/8	30 x 1/4	30 x 3/4	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/4	30 x 3/4	30 x 3/8	30 x 3/8	30 x 3/8
c	Cover Plates	2	23 x 7/16 [**]	23 x 7/16 [**]	22 x 3/8	22 x 3/8	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	22 x 1/2 *)	23 x 3/16 *)	23 x 3/16 *)
e	Inside Angles	2					14 x 1/2	14 x 1/2	14 x 3/8	14 x 3/8	14 x 3/8	14 x 3/8	14 x 3/8	14 x 1/2	14 x 1/2					
							30 x 3/8	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/16	30 x 3/8		
25	Length	In.																		
26	Min. Radius of Gyration	In.																		
27	Allowable Stress	Lbs/Sq.In.	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Actual Gross Area	Sq.In.	49.19	49.19	85.75	108.25	128.69	128.69	125.19	125.19	118.75	118.75	125.19	125.19	128.69	128.69	108.25	85.75	49.19	49.19
29	Net Area	Sq.In.	40.50	40.50	73.63	93.13	110.57	110.57	107.57	107.57	102.13	102.13	107.57	107.57	110.57	110.57	93.13	73.63	40.50	40.50
30	Actual Unit Stress	Lbs/Sq.In.		23,000	23,200	23,840	23,550	23,650	23,110	23,570	23,970	23,970	23,600	23,150	23,610	23,550	23,840	23,200	23,000	
31	Material		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

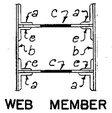
LINE	MEMBER		COMPRESSION WEB MEMBERS																		
			U 701 / L 701	U 702 / M 702	M 702 / L 702	U 703 / M 703	M 703 / L 703	U 704 / M 704	M 704 / L 704	U 705 / M 705	M 705 / L 705	U 706 / M 706	M 706 / L 706	U 707 / L 707	U 708 / L 708	U 709 / L 709	U 710 / L 710	U 711 / L 711	U 712 / M 712	M 712 / L 712	U 713 / M 713
1	Dead Load		- 907	- 1022	- 1164	- 896	- 1031	- 662	- 1050	- 331	- 465	- 529	- 670	- 262	- 274	- 125	- 281	- 267	- 533	- 674	- 332
2	0.8 Dead Load		- 726	- 818	- 931	- 717	- 825	- 530	- 840	- 265	- 372	- 423	- 536	- 210	- 219	- 100	- 225	- 214	- 426	- 539	- 266
3	Live Load + Imp. - Tension																				
4	Reduced LL + Imp. - Tension							+ 208	+ 178	+ 189	+ 189	+ 155	+ 155	+ 176	+ 150		+ 152	+ 176	+ 158	+ 158	+ 191
5	Live Load + Imp. - Comp.																				
6	Reduced LL + Imp. - Comp.		- 231	- 248	- 296	- 208	- 260	- 352	- 396	- 327	- 370	- 272	- 319	- 243	- 197	- 48	- 198	- 243	- 272	- 319	- 327
7	Reduced LL + Imp. Ten. x D(CF) [e]							+ 345	+ 295	+ 313	+ 313	+ 257	+ 257	+ 292	+ 249		+ 252	+ 292	+ 262	+ 262	+ 317
8	Reduced LL + Imp. Comp. x D(CF) [e]		- 383	- 411	- 491	- 345	- 431	- 583	- 656	- 542	- 613	- 451	- 529	- 403	- 326	- 80	- 328	- 403	- 451	- 529	- 542
9	Ratio = Line 4 / Line 5 (Comp.) or Line 6 / Line 5 (Ten.)							- 0.31	- 0.17	- 0.57	- 0.41	- 0.29	- 0.23	- 0.67	- 0.50		- 0.50	- 0.66	- 0.30	- 0.23	- 0.57
10	L.L. Sidewalk - Tension							+ 10	+ 10	+ 13	+ 13	+ 8	+ 8	+ 9	+ 9		+ 9	+ 9	+ 8	+ 8	+ 13
11	L.L Sidewalk - Comp.		- 11	- 12	- 14	- 10	- 12	- 19	- 21	- 16	- 18	- 12	- 15	- 11	- 12	- 1	- 12	- 11	- 12	- 15	- 16
12	Direct Design Stress		- 1120	- 1241	- 1436	- 1072	- 1268	- 1132	- 1517	- 823	- 1003	- 886	- 1080	- 624	- 557	- 181	- 565	- 628	- 889	- 1083	- 824
13	Reverse Design Stress																				
14																					
15																					
	SECTION	Holes out for Tension																			
a	Flange Angles	2	4 x 4 x 3/8	4 x 4 x 3/8	6 x 4 x 1/2	6 x 4 x 1/2	7 x 4 x 3/8	7 x 4 x 3/8	6 x 4 x 7/16	6 x 4 x 7/16	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	6 x 4 x 7/16
b	1st Web Plate	3	24 x 7/16	26 x 3/4	26 x 3/4	28 x 3/8	28 x 3/8	30 x 3/4	30 x 3/4	28 x 1/2	28 x 1/2	26 x 5/8	28 x 3/8	24 x 7/16	24 x 1/8	24 x 3/8	24 x 3/8	24 x 7/16	26 x 3/8	26 x 1/8	28 x 1/2
c	Cover Plates	2	23 x 7/16 [**]	23 x 1/2 [**]	23 x 7/16 [**]	23 x 7/16 [**]	23 x 7/16 [**]	23 x 7/16 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]
e	Inside Angles	2			4 x 4 x 3/8		4 x 4 x 3/8		4 x 4 x 3/8		4 x 4 x 3/8		4 x 4 x 3/8					4 x 4 x 3/8			
25	Length	In.	408"	496"	496"	636"	636"	816"	816"	631"	631"	504"	504"	448"	392"	392"	392"	448"	504"	504"	631"
26	Min. Radius of Gyration	In.	7.69	7.93	7.71	8.54	8.25	9.10	8.80	8.57	8.21	7.95	7.67	7.65	7.70	7.70	7.70	7.65	7.95	7.67	8.57
27	Allowable Stress	Lbs/Sq.In.	18,710	18,090	18,100	17,270	17,260	16,050	16,050	17,290	17,280	18,020	18,020	18,420	18,800	18,420	18,020	18,020	17,290	17,280	16,050
28	Actual Gross Area	Sq.In.	62.82	68.82	80.26	65.38	76.82	82.34	93.78	54.47	65.91	53.69	65.13	42.19	39.19	39.19	39.19	42.19	53.69	65.13	54.47
29	Net Area	Sq.In.	61.27	68.82	80.26	62.41	76.82	82.34	93.78	48.31	65.62	50.00	65.04	34.72	31.33	31.88	31.33	34.72	50.00	65.04	48.31
30	Actual Unit Stress	Lbs/Sq.In.	18,260	18,040	17,880	17,200	16,500	13,750	16,150	17,050	15,320	17,720	16,620	17,980	17,780	16,80	18,030	18,020	17,780	16,680	17,150
31	Material		S	S	S	S	S	S	S	S	S	S	S	S	S	C	S	S	S	S	S

LINE	MEMBER		TENSION WEB MEMBERS																		
			L 700 / U 700	L 701 / U 701	L 702 / U 702	L 703 / U 703	L 704 / U 704	L 705 / U 705	L 706 / U 706	L 707 / U 707	L 708 / U 708	L 709 / U 709	L 710 / U 710	L 711 / U 711	L 712 / U 712	L 713 / U 713	L 714 / U 714	L 715 / U 715	L 716 / U 716	L 717 / U 717	L 718 / U 718
1	Dead Load		+ 1069	+ 1097	+ 870	+ 589	- 42	+ 218	+ 464	+ 151	+ 182	+ 190	+ 138	+ 469	+ 219	- 43	+ 587	+ 872	+ 1104	+ 1094	
2	0.8 Dead Load		+ 855	+ 878	+ 696	+ 471	- 34	+ 174	+ 371	+ 121	+ 146	+ 152	+ 126	+ 375	+ 175	- 34	+ 469	+ 698	+ 883	+ 875	
3	Live Load + Imp. - Tension																				
4	Reduced LL + Imp. - Tension		+ 294	+ 288	+ 222	+ 160	+ 340	+ 366	+ 312	+ 290	+ 247	+ 247	+ 290	+ 312	+ 386	+ 340	+ 159	+ 220	+ 284	+ 288	
5	Live Load + Imp. - Comp.																				
6	Reduced LL + Imp. - Comp.						- 260	- 220	- 188	- 221	- 212	- 213	- 225	- 191	- 221	- 259					
7	Reduced LL + Imp. Ten. x D(CF) [e]		+ 487	+ 477	+ 368	- 265	+ 564	+ 606	+ 517	+ 481	+ 410	+ 410	+ 481	+ 517	+ 606	+ 564	+ 264	+ 365	+ 471	+ 477	
8	Reduced LL + Imp. - Comp. x D(CF) [e]						- 431	- 365	- 312	- 366	- 352	- 353	- 373	- 317	- 366	- 429					
9	Ratio = Line 4 / Line 5 (Comp.) or Line 6 / Line 5 (Ten.)						- 8.11	- 1.01	- 0.41	- 1.46	- 1.16	- 1.12	- 1.42	- 0.41	- 1.01	- 791					
10	L.L Sidewalk - Tension		+ 13	+ 13	+ 10	+ 6	+ 16	+ 18	+ 14	+ 12	+ 14	+ 14	+ 12	+ 14	+ 18	+ 16	+ 6	+ 10	+ 13	+ 13	
11	L.L Sidewalk - Comp.						- 18	- 15	- 10	- 11	- 12	- 12	- 11	- 10	- 15	- 18					
12	Direct Design Stress		+ 1355	+ 1368	+ 1074	+ 742	- 483	+ 798	+ 902	+ 614	+ 570	+ 576	+ 619	+ 906	+ 799	- 481	+ 739	+ 1073	+ 1367	+ 1365	
13	Reverse Design Stress						+ 546	- 3		- 144	- 54	- 40	- 135		- 3	+ 546					
14																					
15																					
	SECTION	Holes out for Tension																			
a	Flange Angles	2	4 x 4 x 3/4	4 x 4 x 3/4	4 x 4 x 1/2	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 3/8	4 x 4 x 1/2	4 x 4 x 1/2	4 x 4 x 3/4
b	1st Web Plate	3	24 x 3/4	24 x 3/4	26 x 3/8	28 x 3/8	28 x 3/8	26 x 7/16	24 x 1/2	24 x 7/16	24 x 3/8	24 x 3/8	24 x 7/16	24 x 1/2	26 x 7/16	28 x 3/8	28 x 3/8	26 x 3/8	24 x 3/4	24 x 3/4	
c	Cover Plates	2	23 x 7/16 [**]	23 x 7/16 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 1/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 3/8 [**]	23 x 7/16 [**]	23 x 7/16 [**]	
e	Inside Angles	2																			
25	Length	In.																			
26	Min. Radius of Gyration	In.																			
27	Allowable Stress	Lbs/Sq.In.	24,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000	18,000	18,000	18,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	
28	Actual Gross Area	Sq.In.	69.14	69.14	57.25	42.19	42.19	43.94	45.19	42.19	39.19	39.19	42.19	45.19	43.94	42.19	42.19	57.25	69.14	69.14	
29	Net Area	Sq.In.	56.89	56.89	46.75	34.69	34.69	35.94	37.69	35.07	32.44	32.44	35.07	37.69	35.94	34.69	34.69	46.75	56.89	56.89	
30	Actual Unit Stress	Lbs/Sq.In.	23,820	24,040	23,000	21,360	15,750	22,250	23,930	17,500	17,500	17,750	17,650	24,030	22,250	15,750	21,300	23,000	24,040	23,980	
31	Material		S	S	S	S	S	S	S	C	C	C	C	S	S	S	S	S	S	S	

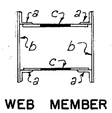
*) Handhole 11" wide
**) Handhole 10" wide
S = Special Steel
C = Carbon Steel



CHORD



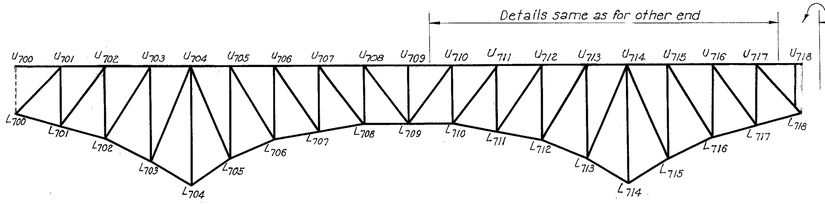
WEB MEMBER



WEB MEMBER

All dead and live load stresses are in kips.

Line 29, net area for tension or effective gross area for compression.



Truss dimensions are shown on framing plan, Sheet 24.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5

STRESS SHEET UNIT 7
SOUTH TRUSS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE H.W.L. DATE 5-17-54
TRCD. E.A.H. DATE 5-15-54
CKD. E.L. DATE 5-16-54

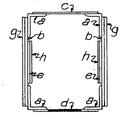
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

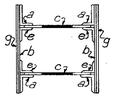
914-1A SHEET 2.81

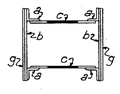
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

80
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT







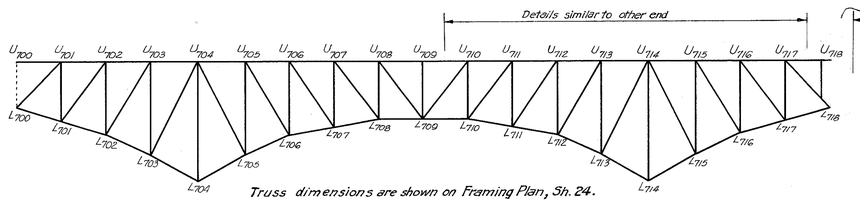
LINE	MEMBER	COMPRESSION CHORD L700 L701	L701 L702	L702 L703	L703 L704	L704 L705	L705 L706	L706 L707	L707 L708	L708 L709	L709 L710	L710 L711	L711 L712	L712 L713	L713 L714	L714 L715	L715 L716	L716 L717	L717 L718	TENSION CHORD U700 U701	U701 U702	U702 U703	U703 U704	U704 U705	U705 U706	U706 U707	U707 U708	U708 U709	U709 U710	U710 U711	U711 U712	U712 U713	U713 U714	U714 U715	U715 U716	U716 U717	U717 U718
1	Dead Load	- 790	-1486	-2077	-2560	-2578	-2392	-2177	-1951	-1867	-1892	-1995	-2237	-2460	-2649	-2631	-2142	-1536	- 819		+ 758	+ 1426	+ 1882	+ 2202	+ 2140	+ 1918	+ 1867	+ 1768	+ 1768	+ 1892	+ 1962	+ 2198	+ 2264	+ 1940	+ 1474	+ 786	
2	0.8 Dead Load	- 632	-1189	-1662	-2048	-2062	-1914	-1742	-1561	-1494	-1514	-1596	-1790	-1968	-2119	-2105	-1714	-1229	- 655		+ 606	+ 1141	+ 1506	+ 1762	+ 1712	+ 1534	+ 1494	+ 1414	+ 1414	+ 1514	+ 1570	+ 1758	+ 1811	+ 1522	+ 1179	+ 629	
3	Live Load + Imp - Tension																																					
4	Reduced LL + Imp-Tension						+ 161	+ 325	+ 473	+ 599	+ 599	+ 473	+ 325	+ 161							+ 205	+ 360	+ 448	+ 577	+ 641	+ 689	+ 767	+ 769	+ 769	+ 769	+ 693	+ 650	+ 586	+ 455	+ 367	+ 208	
5	Live Load + Imp - Comp.																																					
6	Reduced LL + Imp. - Comp.	- 214	- 377	- 494	- 571	- 576	- 624	- 652	- 701	- 767	- 769	- 706	- 662	- 635	- 586	- 581	- 502	- 383	- 219					- 148	- 320	- 460	- 599	- 614	- 614	- 599	- 465	- 320	- 148					
7	Reduced LL + Imp-Ten. + D(CF)e						+ 267	+ 539	+ 785	+ 993	+ 993	+ 785	+ 539	+ 267							+ 340	+ 596	+ 742	+ 956	+ 1062	+ 1141	+ 1271	+ 1274	+ 1274	+ 1274	+ 1148	+ 1077	+ 971	+ 754	+ 608	+ 345	
8	Reduced LL + Imp-Comp. + D(CF)e	- 355	- 625	- 818	- 947	- 955	-1034	-1080	-1162	-1271	-1274	-1170	-1097	-1052	- 971	- 963	- 832	- 635	- 363					- 245	- 530	- 771	- 993	- 1017	- 1017	- 993	- 771	- 530	- 245					
9	Ratio = Line 7 (Comp.) / Line 7 (Ten.) or Line 8 / Line 7 (Ten.)						-0.067	-0.149	-0.242	-0.321	-0.316	-0.237	-0.145	-0.065										-0.067	-0.149	-0.242	-0.321	-0.347	-0.347	-0.317	-0.237	-0.146	-0.065					
10	LL Sidewalk - Tension						+ 8	+ 17	+ 25	+ 32	+ 32	+ 25	+ 17	+ 8							+ 8	+ 16	+ 21	+ 29	+ 32	+ 46	+ 53	+ 54	+ 54	+ 53	+ 46	+ 32	+ 29	+ 21	+ 16	+ 8	
11	LL Sidewalk - Comp.	- 9	- 17	- 24	- 29	- 29	- 32	- 33	- 47	- 53	- 53	- 47	- 33	- 32	- 29	- 29	- 24	- 17	- 9					- 8	- 17	- 24	- 32	- 33	- 33	- 32	- 24	- 17	- 8					
12	Direct Design Stress	- 996	-1831	-2504	-3024	-3046	-2980	-2855	-2770	-2818	-2841	-2813	-2920	-3052	-3119	-3097	-2570	-1881	-1027		+ 954	+ 1753	+ 2269	+ 2747	+ 2806	+ 2721	+ 2818	+ 2742	+ 2742	+ 2841	+ 2764	+ 2867	+ 2811	+ 2327	+ 1803	+ 982	
13	Reverse Design Stress																																					
14																																						
15																																						
	SECTION (Holes out for Tension)																																					
a	Flange Angles (2)	8x6x 7/16	8x6x 7/16	8x6x 5/8	8x6x 3/4	8x6x 7/8	8x6x 5/8	8x6x 5/8	8x6x 5/8	8x6x 5/8	8x6x 5/8	8x6x 5/8	8x6x 5/8	8x6x 5/8	8x6x 7/8	8x6x 7/8	8x6x 5/8	8x6x 7/16	8x6x 7/16	4x4x 1/2	4x4x 1/2	8x6x 5/8	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 5/8	8x6x 5/8	4x4x 1/2	4x4x 1/2
b	1 Web Plate (4)	30x 1/2	30x 1/2	30x 5/8	30x 3/4	30x 7/8	30x 1/2	30x 5/8	30x 5/8	30x 5/8	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 1/2	30x 1/2	30x 1/2	30x 5/8	30x 3/4	30x 3/4	30x 5/8	30x 5/8	30x 11/16	30x 11/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 11/16	30x 11/16	30x 5/8	30x 5/8
c	Top Cover Plate (2)	23x 3/4	23x 3/4	22x 5/8	22x 3/4	22x 7/8	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	23x 3/4	23x 3/4	23x 5/16	23x 5/16	23x 5/16	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	23x 5/16	23x 5/16
d	Bottom Cover Plate (2)	23x 1(*)	23x 1(*)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	22x 1(**)	23x 1(*)	23x 1(*)	23x 1(*)	23x 1(*)	. 23x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	22x 1(*)	23x 1(*)	23x 1(*)
e	Inside Web Plate (2)		14x 7/16				14x 3/4																	14x 9/16	14x 9/16	14x 9/16	14x 9/16	14x 7/16	14x 7/16	14x 7/16	14x 9/16	14x 9/16	14x 9/16	14x 9/16				
g	2 Out side Web Plate (4)		30x 5/8	30x 5/8	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4						30x 7/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 7/16			
h	2 Inside Web Plate (2)																																					
25	Length - In.	316.3"	312.7"	331.1"	367.1"	375.8"	325.8"	305.2"	305.2"	300"	300"	305.2"	305.2"	325.8"	375.8"	367.1"	331.1"	312.7"	316.3"																		
26	Min. Radius of Gyration - In.	10.63	10.84	10.90	10.80	10.80	10.8	10.9	10.9	10.90	10.90	10.9	10.9	10.8	10.80	10.80	10.9	10.84	10.63																		
27	Allowable Stress - Lbs./Sq. In.	19,590	19,620	19,570	19,470	19,450	19,580	19,640	19,640	19,650	19,650	19,640	19,640	19,580	19,450	19,470	19,570	19,620	19,590	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Actual Gross Area - Sq. In.	60.85	95.60	131.19	158.67	158.67	156.69	146.19	146.19	146.19	146.19	146.19	146.19	156.69	158.67	158.67	131.19	95.60	60.85	49.19	49.19	88.44	114.69	136.76	136.76	136.76	136.76	136.76	133.26	139.26	136.76	136.76	136.76	136.76	114.69	88.44	49.19	49.19
29	Net Area - Sq. In.	54.28	95.22	131.19	158.67	158.67	156.69	146.19	146.19	146.19	146.19	146.19	146.19	156.69	158.67	158.67	131.19	95.22	54.28	40.50	40.50	75.82	98.57	117.39	117.39	117.39	117.39	114.39	114.39	117.39	117.39	117.39	117.39	98.57	75.82	40.50	40.50	
30	Actual Unit Stress - Lbs./Sq. In.	18,380	19,230	19,090	19,060	19,200	19,020	19,530	18,950	19,280	19,430	19,240	19,930 (1.5f)	19,480	19,660	19,520	19,600	19,750	18,920		23,560	23,120	23,020	23,400	23,900	23,180	24,000	23,970	23,970	24,200	23,550	24,420 (1.75f)	23,950	23,610	23,780	24,250			
31	Material	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

LINE	MEMBER	COMPRESSION WEB MEMBERS U701 L701	U702 M702	M702 L702	U703 M703	M703 L703	U704 M704	M704 L704	U705 M705	M705 L705	U706 M706	M706 L706	U707 M707	U708 M708	U709 M709	U710 M710	U711 M711	U712 M712	M712 L712	U713 M713	M713 L713	U714 M714	M714 L714	U715 M715	M715 L715	U716 M716	M716 L716	U717 M717	U718 M718	M718 L718
1	Dead Load	- 935	-1041	-1184	- 899	-1054	- 877	- 780	- 237	- 381	- 463	- 605	- 200	- 255	- 121	- 287	- 224	- 485	- 627	- 246	- 391	- 886	- 766	-1917	-1062	-1069	-1212	- 968	- 89	
2	0.8 Dead Load	- 748	- 833	- 947	- 719	- 836	- 702	- 624	- 189	- 305	- 371	- 484	- 160	- 204	- 97	- 230	- 179	- 388	- 502	- 197	- 313	- 709	- 613	- 734	- 850	- 855	- 970	- 774	- 71	
3	Live Load + Imp. - Tension																													
4	Reduced LL + Imp - Tension						+ 176	+ 208	+ 203	+ 203	+ 167	+ 167	+ 188	+ 156		+ 153	+ 185	+ 164	+ 164	+ 202	+ 202	+ 176	+ 210								
5	Live Load + Imp - Comp.																													
6	Reduced LL + Imp. - Comp.	- 236	- 247	- 293	- 204	- 254	- 344	- 377	- 319	- 362	- 260	- 306	- 237	- 195	- 45	- 198	- 237	- 260	- 306	- 319	- 366	- 344	- 376	- 205	- 256	- 250	- 297	- 238	- 47	
7	Reduced LL + Imp-Ten. + D(CF)e						+ 292	+ 345	+ 337	+ 337	+ 277	+ 277	+ 312	+ 258		+ 254	+ 307	+ 272	+ 272	+ 335	+ 335	+ 292	+ 348								
8	Reduced LL + Imp-Comp. + D(CF)e	- 392	- 410	- 496	- 338	- 421	- 570	- 625	- 529	- 600	- 431	- 507	- 393	- 323	- 75	- 328	- 393	- 431	- 507	- 529	- 606	- 570	- 623	- 340	- 424	- 415	- 492	- 395	- 78	
9	Ratio = Line 6 (Comp.) / Line 6 (Ten.) or Line 8 / Line 7 (Ten.)						- 0.20	- 0.27	- 0.86	- 0.53	- 0.36	- 0.28	- 0.94	- 0.61		- 0.53	- 0.83	- 0.34	- 0.26	- 0.82	- 0.52	- 0.20	- 0.27								
10	LL Sidewalk - Tension						+ 10	+ 10	+ 14	+ 14	+ 8	+ 8	+ 9	+ 9		+ 9	+ 9	+ 8	+ 8	+ 14	+ 14	+ 10	+ 10								
11	LL Sidewalk - Comp.	- 11	- 12	- 14	- 10	- 12	- 20	- 22	- 16	- 19	- 13	- 15	- 11	- 12	- 1	- 12	- 11	- 13	- 15	- 16	- 19	- 20	- 22	- 10	- 12	- 12	- 14	- 9	- 1	
12	Direct Design Stress	-1151	-1255	-1447	-1067	-1269	-1232	-1271	- 734	- 924	- 815	-1006	- 564	- 539	- 173	- 570	- 583	- 832	-1024	- 742	- 938	-1299	-1258	-1084	-1286	-1282	-1476	-1178	- 150	
13	Reverse Design Stress																													
14																														
15																														
	SECTION (Holes out for Tension)																													
a	Flange Angles (2)	4x4x 3/8	4x4x 3/8	4x4x 3/8	6x4x 1/2	6x4x 1/2	7x4x 5/8	7x4x 5/8	6x4x 7/16	6x4x 7/16	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	6x4x 7/16	6x4x 7/16	7x4x 5/8	7x4x 5/8	6x4x 1/2	6x4x 1/2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8
b	1. Web Plate (4)	24x 3/8	26x 3/8	26x 3/8	28x 3/8	28x 3/8	30x 3/8	30x 3/8	28x 1/4	28x 1/4	26x 3/8	26x 3/8	24x 7/16	24x 3/8	24x 3/8	24x 3/8	24x 7/16	24x 7/16	26x 3/8	26x 1/4	26x 1/4	28x 1/4	28x 1/4	28x 3/8	28x 3/8	26x 1/2	26x 1/2	24x 1/2	24x 1/2	24x 1/2	24x 1/2
c	Cover Plates (2)	23x 7/16(**)	23x 7/16(**)	23x 7/16(**)	23x 7/16(**)	23x 7/16(**)	23x 7/16(**)	23x 7/16(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 7/16(**)	23x 7/16(**)	23x 7/16(**)	23x 7/16(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)
e	Inside Angles (2)			4x4x 3/8		4x4x 3/8			4x4x 3/8										4x4x 3/8				4x4x 3/8		4x4x 3/8					
g	2. Web Plate (3)																													
25	Length - In.	408"	496"	496"	636"	636"	816"	816"	631"	631"	504"	504"	448"	392"	392"	392"	448"	504"	504"	631"	631"	816"	816"	636"	636"	496"	496"	408"	320"	
26	Min. Radius of Gyration - In.	7.67	7.99	7.77	8.54	8.25	9.10	9.10	8.57	8.21	7.95	7.67	7.65	7.70	7.70	7.70	7.65	7.95	7.67	8.57	8.21	9.10	9.10	8.54	8.25	7.99	7.77	7.67	7.70	
27	Allowable Stress - Lbs./Sq. In.	18,700	18,120	18,120	17,270	17,260	16,300	16,300	17,290	17,280	18,020	18,020	18,420	18,800	14,350	18,800	18,420	18,020	18,020	17,290	17,280	16,300	16,300	17,270	17,260	18,120	18,120	18,700	14,560	
28	Actual Gross Area - Sq. In.	64.19	72.14	83.58	65.38	76.82	82.34	82.34	54.47	65.91	53.69	65.13	42.19	39.19	39.19	39.19	42.19	53.69	65.13	54.47	65.91	82.34	82.34	65.38	76.82	72.14	83.58	64.19	39.19	
29	Net Area - Sq. In.	64.19	72.14	83.58	62.41	76.82	82.34	82.34	48.31	65.72	50.00	64.94	34.72	31.33	31.88	31.33	34.72	50.00	65.04	48.31	65.62	82.34	82.34	62.41	76.82	72.14	83.58	64.19	31.88	
30	Actual Unit Stress - Lbs./Sq. In.	17,930	17,400	17,300	17,100	16,520	15,760	15,440	15,200	14,060	16,300	15,490	16,240	17,200	5,430	18,180	16,800	16,640	15,800	15,370	14,300	15,760	15,260	17,350	16,740	17,800	17,650	18,350	4,700	
31	Material	S	S	S	S	S	S	S	S	S	S	S	S	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	C	

LINE	MEMBER	TENSION WEB MEMBERS L700 U701	L701 U702	L702 U703	L703 U704	L704 U705	L705 U706	L706 U707	U707 L708	L708 U709	L709 U710	L710 U711	L711 U712	L712 U713	L713 U714	L714 U715	L715 U716	L716 U717	L717 U718
1	Dead Load	+ 1103	+ 1126	+ 883	+ 766	+ 43	+ 121	+ 398	+ 82	+ 164	+ 205	+ 113	+ 425	+ 129	+ 42	+ 775	+ 901	+ 1161	+ 1156
2	0.8 Dead Load	+ 882	+ 901	+ 705	+ 613	+ 34	+ 97	+ 319	+ 66	+ 131	+ 164	+ 90	+ 340	+ 103	+ 34	+ 620	+ 721	+ 929	+ 925
3	Live Load + Imp. - Tension																		
4	Reduced LL + Imp - Tension	+ 300	+ 289	+ 219	+ 186	+ 332	+ 355	+ 300	+ 280	+ 247	+ 248	+ 280	+ 300	+ 355	+ 332	+ 187	+ 222	+ 291	+ 305
5	Live Load + Imp - Comp.																		
6	Reduced LL + Imp. - Comp.					- 244	- 236	- 202	- 237	- 215	- 213	- 232	- 197	- 235	- 244				
7	Reduced LL + Imp-Ten. + D(CF)e	+ 497	+ 480	+ 363	+ 308	+ 550	+ 589	+ 497	+ 463	+ 409	+ 411	+ 463	+ 497	+ 589	+ 550	+ 310	+ 368	+ 483	+ 506
8	Reduced LL + Imp-Comp. + D(CF)e					- 404	- 391	- 335	- 393	- 356	- 353	- 384	- 326	- 390	- 404				
9	Ratio = Line 6 (Comp.) / Line 6 (Ten.) or Line 8 / Line 7 (Ten.)					- 5.67	- 1.95	- 0.51	- 2.89	- 1.31	- 1.04	- 2.05	- 0.46	- 1.82	- 5.81				
10	LL Sidewalk - Tension	+ 13	+ 13	+ 10	+ 8	+ 17	+ 17	+ 14	+ 12	+ 14	+ 14	+ 12	+ 14	+ 17	+ 17	+ 8	+ 10	+ 13	+ 13
11	LL Sidewalk - Comp.					- 17	- 16	- 10	- 12	- 12	- 12	- 12	- 10	- 16	- 17				
12	Direct Design Stress	+ 1392	+ 1394	+ 1079	+ 929	+ 601	+ 703	+ 830	+541	+ 554	+ 589	+ 565	+ 851	+ 709	+ 601	+ 938	+ 1099	+ 1425	+ 1444
13	Reverse Design Stress					- 387	- 301		- 339	- 110	- 26	- 306		- 266	- 387				
14																			
15																			
	SECTION (Holes out for Tension)																		
a	Flange Angles (2)	4x4x 3/8	4x4x 3/8	4x4x 1/2	4x4x 1/2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 1/2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 1/2	4x4x 3/8
b	1. Web Plate (3)	24x 11/16	24x 13/16	26x 3/8	28x 1/2	28x 3/8	26x 3/8	24x 1/2	24x 3/8	24x 3/8	24x 3/8	24x 3/8	24x 3/8	26x 3/8	24x 3/8	26x 3/8	28x 3/8	26x 3/8	24x 13/16
c	Cover Plates (2)	23x 7/16(**)	23x 7/16(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 3/8(**)	23x 7/16(**)
e	Inside Angles (2)																		
g	2. Web Plate (3)																		
25	Length - In.	408"	320"																
26	Min. Radius of Gyration - In.	7.70	7.70																
27	Allowable Stress - Lbs./Sq. In.	24,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000	18,000	18,000	18,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Actual Gross Area - Sq. In.	72.14	72.14	57.25	49.19	42.19	40.69	45.19	39.19	39.19	39.19	39.19	45.19	40.69	42.19	49.19	57.25	72.14	72.14
29	Net Area - Sq. In.	59.52	59.52	46.75	40.69	34.69	33.19	37.69	32.44	32.44	32.44	32.44	37.69	33.19	34.69	40.69	46.75	59.52	59.52
30	Actual Unit Stress - Lbs./Sq. In.	23,390	23,420	23,000	22,830	17,340	21,180	22,020	16,680	17,100	18,180 (1.5f)	17,400	22,560	21,360	17,340	23,050	23,510	23,910	24,260 (1.5f)
31	Material	S	S	S	S	S	S	S	C	C	C	C	S	S	S	S	S	S	S

*) Handhole 11" Wide
**) Handhole 10" Wide
S= Special Steel
C= Carbon Steel

All dead and live load stresses are in kips.
Line 29, - Net area for tension or effective gross area for compression.



Truss dimensions are shown on Framing Plan, Sh. 24.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5
STRESS SHEET UNIT 7
NORTH TRUSS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE
MADE K.W.L. DATE 5-13-54
TRCD. G.J.K. DATE 8-2-54
CKD. E.L. DATE 8-11-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.80

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

79
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U 63

U 62

U 61

U 60

L 63

L 62

L 61

L 60

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5
TRUSSES, UNIT 6
PANELS 60, 61, 62, 63, SOUTH
CLEVELAND CUYAHOGA COUNTY OHIO

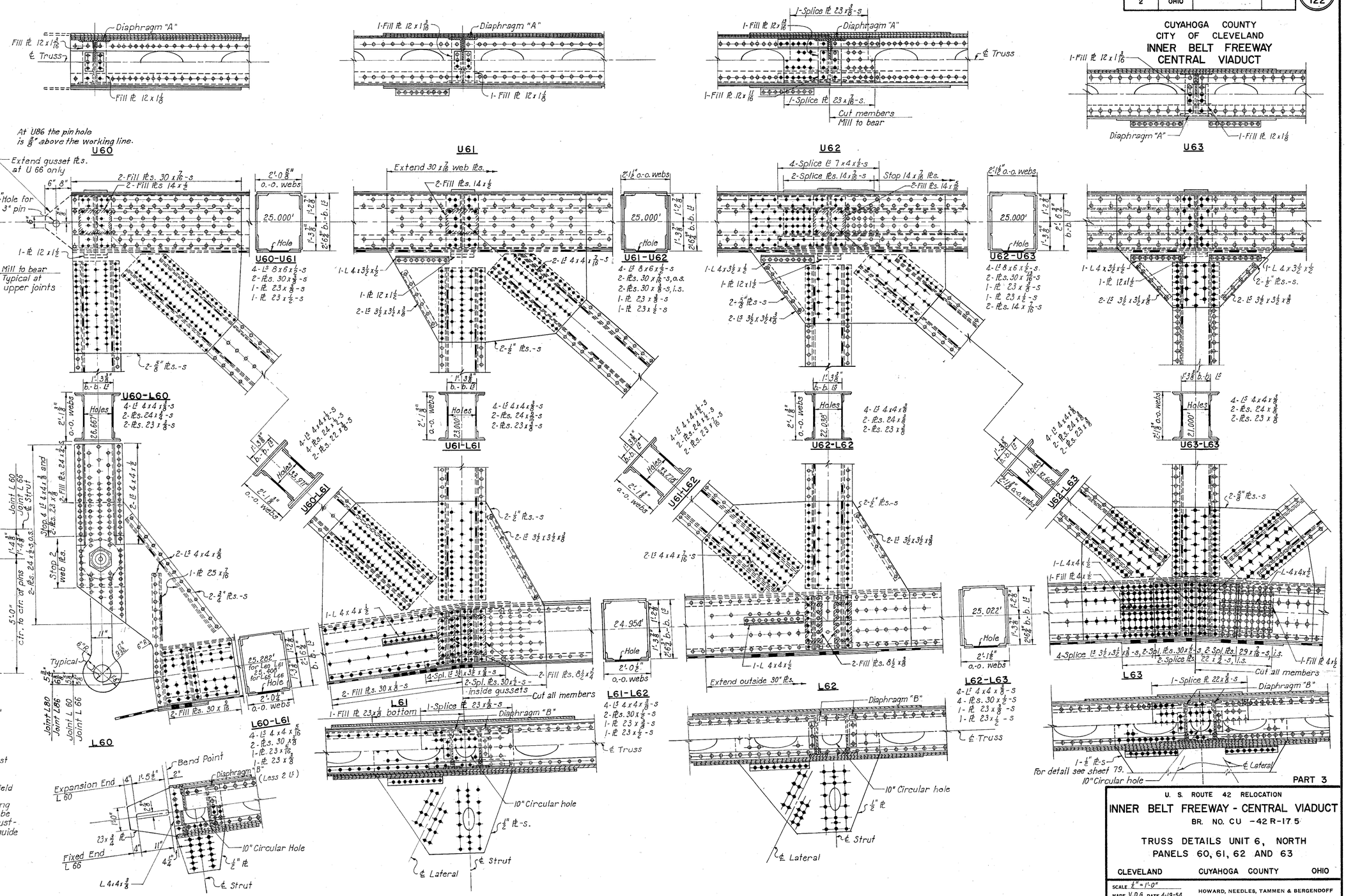
SCALE 1/2"=1'-0"
MADE JGS DATE 5-3-54
TRCD GJK DATE 1-25-55
CKD GJC DATE 9-24-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.79

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

78
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



Note :
Links to be forgings or cut from cast or rolled steel slabs. Material to have minimum yield point of 60,000 psi.
Pins to be forgings with a minimum yield point of 50,000 psi.
Countersunk rivets are for attaching 1/2" gusset in shop. Open holes are to be drilled or reamed in the field for adjustment of the 23 x 3/4" plate to 8 x 6 x 1 1/8 guide angles on the cantilever span.

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO. CU -42 R-17.5

TRUSS DETAILS UNIT 6, NORTH PANELS 60, 61, 62 AND 63

CLEVELAND CUYAHOGA COUNTY OHIO

PART 3

SCALE 1/4" = 1'-0"
MADE V.D.G. DATE 4-19-54
TRCD. T.A.H. DATE 9-6-54
CKD. C.J.C. DATE 8-13-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.78

290

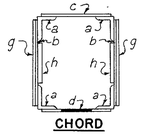
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

77
122

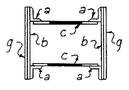
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

TENSION CHORD – SOUTH TRUSS						COMPRESSION CHORD – SOUTH TRUSS						LINE	MEMBER	TENSION CHORD – NORTH TRUSS						COMPRESSION CHORD – NORTH TRUSS					
L60 L61	L61 L62	L62 L63	L63 L64	L64 L65	L65 L66	U60 U61	U61 U62	U62 U63	U63 U64	U64 U65	U65 U66			L60 L61	L61 L62	L62 L63	L63 L64	L64 L65	L65 L66	U60 U61	U61 U62	U62 U63	U63 U64	U64 U65	U65 U66
0	+743	+1,242	+1,242	+743	0	-743	-1,241	-1,469	-1,469	-1,241	-743	1	Dead Load	0	+771	+1,290	+1,290	+771	0	-770	-1,289	-1,524	-1,524	-1,289	-770
0	+594	+995	+955	+594	0	-594	-993	-1,175	-1,175	-993	-594	2	0.8 Dead Load	0	+617	+1,032	+1,032	+617	0	-616	-1,031	-1,219	-1,219	-1,031	-616
0	+232	+375	+375	+232	0							3	Live Load+Imp.-Tension	0	+241	+390	+390	+241	0						
0	+232	+375	+375	+232	0							4	Reduced LL+Imp.-Tension	0	+241	+390	+390	+241	0						
						-232	-375	-416	-416	-375	-232	5	Live Load+Imp.-Comp.							-241	-390	-433	-433	-390	-241
						-232	-375	-416	-416	-375	-232	6	Reduced LL+Imp.-Comp.							-241	-390	-433	-433	-390	-241
0	+385	+620	+620	+385	0							7	Reduced LL+Imp.-Ten.xD(CF)^e	0	+400	+645	+645	+400	0						
						-385	-620	-690	-690	-620	-385	8	Reduced LL+Imp.-Comp.xD(CF)^e							-400	-645	-717	-717	-645	-400
												9	Ratio= Line 8 / Line 7 (Comp) or Line 8 / Line 7 (Ten.)												
0	+9	+15	+15	+9	0							10	LL Sidewalk - Tension	0	+10	+16	+16	+10	0						
						-9	-15	-18	-18	-15	-9	11	LL Sidewalk - Comp.							-10	-16	-19	-19	-16	-10
0	+988	+1,630	+1,630	+988	0	-988	-1,628	-1,883	-1,883	-1,628	-988	12	Direct Design Stress	0	+1,027	+1,693	+1,693	+1,027	0	-1,026	-1,692	-1,955	-1,955	-1,692	-1,026
												13	Reverse Design Stress												
4x4x5/16	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x5/16	8x6x7/16	8x6x7/16	8x6x1/2	8x6x1/2	8x6x7/16	8x6x7/16		Section												
30x3/8	30x7/16	30x7/16	30x7/16	30x7/16	30x3/8	30x3/8	30x3/8	30x3/4	30x3/4	30x3/8	30x3/8	a	Flange Angles (Holes out for tension)	4	4x4x5/16	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x5/16	8x6x1/2	8x6x1/2	8x6x1/2	8x6x1/2	8x6x1/2	8x6x1/2
23x5/16	23x3/8	23x3/8	23x3/8	23x3/8	23x5/16	23x3/8	23x3/8	23x3/8	23x3/8	23x3/8	23x3/8	b	1st Web Plate (Holes out for tension)	4	30x5/16	30x1/2	30x1/2	30x1/2	30x1/2	30x3/8	30x3/8	30x3/8	30x13/16	30x13/16	30x3/8	30x3/8
23x3/8 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *	23x3/8 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *	c	Top Cover Plate	3	23x5/16	23x3/8	23x3/8	23x3/8	23x3/8	23x5/16	23x3/8	23x3/8	23x3/8	23x3/8	23x3/8	23x3/8
		30x1/2	30x1/2				30x3/8			30x3/8		d	Bottom Cover Plate	2	23x3/8 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *	23x3/8 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *	23x1/2 *
								14x3/8	14x3/8			g	2nd Web Plate	4			30x1/2	30x1/2				30x7/16				
												h	Inner Web Plate	2									14x7/16	14x7/16		
						300"	300"	300"	300"	300"	300"	25	Length In.							300"	300"	300"	300"	300"	300"
						10.63	11.13	11.00	11.00	11.13	10.63	26	Min. Radius of Gyration In.							10.59	11.18	10.84	10.84	11.18	10.59
18,000	24,000	24,000	24,000	24,000	18,000	19,630	19,670	19,660	19,660	19,670	18,630	27	Allowable Stress Lbs/Sq.In.	18,000	24,000	24,000	24,000	24,000	18,000	19,630	19,670	19,650	19,650	19,670	19,630
43.79	52.32	82.32	82.32	52.32	43.79	60.85	83.35	97.13	97.13	83.35	60.85	28	Actual Gross Area Sq.In.	43.79	56.07	86.07	86.07	56.07	43.79	64.13	90.38	102.63	102.63	90.38	64.13
36.60	43.69	69.69	69.69	43.69	36.60	54.28	82.97	96.75	96.75	82.97	54.28	29	Net Area Sq.In.	36.60	46.94	72.94	72.94	46.94	36.60	57.56	90.00	102.25	102.25	90.00	57.56
0	22,610	23,360	23,360	22,610	0	18,200	19,620	19,460	19,460	19,620	18,200	30	Actual Unit Stress Lbs/Sq.In.	0	21,880	23,200	23,200	21,880	0	17,840	18,800	19,120	19,120	18,800	17,840
C	S	S	S	S	C	S	S	S	S	S	S	31	Material	C	S	S	S	S	C	S	S	S	S	S	S

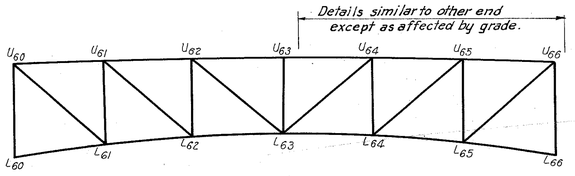
TENSION WEB MEMBERS – SOUTH TRUSS						COMPRESSION WEB MEMBERS – SOUTH TRUSS							LINE	MEMBER	TENSION WEB MEMBERS – NORTH TRUSS							COMPRESSION WEB MEMBERS – NORTH TRUSS						
U60 L61	U61 L62	U62 L63	L63 U64	L64 U65	L65 U66	U60 L60	L61 U61	U62 L62	U63 L63	U64 L64	U65 L65	U66 L66			U60 L61	U61 L62	U62 L63	L63 U64	L64 U65	L65 U66	U60 L60	U61 L61	U62 L62	L63 U63	U64 L64	U65 L65	U66 L66
+1,009	+665	+298	+298	+665	+1,009	-763	-556	-303	-120	-303	-556	-827	1	Dead Load	+1,044	+693	+307	+307	+693	+1,044	-789	-586	-326	-137	-326	-586	-856
+807	+532	+238	+238	+532	+807	-611	-445	-242	-96	-242	-445	-662	2	0.8 Dead Load	+835	+554	+246	+246	+554	+835	-631	-469	-261	-110	-261	-469	-685
+315	+231	+149	+149	+231	+315			+15		+15			3	Live Load+Imp.-Tension	+328	+240	+155	+155	+240	+328			+13		+13		
+315	+231	+149	+149	+231	+315			+15		+15			4	Reduced LL+Imp.-Tension	+328	+240	+155	+155	+240	+328			+13		+13		
	-20	-55	-55	-20		-223	-168	-105	-48	-105	-168	-229	5	Live Load+Imp.-Comp.		-21	-57	-57	-21		-232	-175	-109	-50	-109	-175	-239
	-20	-55	-55	-20		-223	-168	-105	-48	-105	-168	-226	6	Reduced LL+Imp.-Comp.		-21	-57	-57	-21		-232	-175	-109	-50	-109	-175	-235
+522	+383	+247	+247	+383	+522			+25		+25			7	Reduced LL+Imp.-Ten.xD(CF)^e	+542	+398	+257	+257	+398	+542			+22		+22		
	-33	-91	-91	-33		-370	-278	-174	-80	-174	-278	-374	8	Reduced LL+Imp.-Comp x D(CF)^e		-35	-94	-94	-35		-384	-290	-181	-83	-181	-290	-389
	-0.030	-0.185	-0.185	-0.030				-0.020		-0.020			9	Ratio= Line 8 / Line 7 (Comp) or Line 8 / Line 7 (Ten.)		-0.030	-0.186	-0.186	-0.030				-0.018		-0.018		
+12	+9	+5	+5	+9	+12								10	LL Sidewalk - Tension	+13	+9	+6	+6	+9	+13							
		-2	-2			-10	-7	-4	-1	-4	-7	-10	11	LL Sidewalk - Comp.		-0.4	-2	-2	-0.4		-9	-7	-4	-1	-4	-7	-9
+1,341	+924	+490	+490	+924	+1,341	-991	-730	-420	-177	-420	-730	-1,046	12	Direct Design Stress	+1,390	+961	+509	+509	+961	+1,390	-1,024	-766	-446	-194	-446	-766	-1,083
													13	Reverse Design Stress													
4x4x1/2	4x4x1/2	4x4x3/8	4x4x3/8	4x4x1/2	4x4x1/2	4x4x1/2	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x1/2		Section													
24x7/16	24x7/16	24x3/8	24x3/8	24x7/16	24x7/16	24x11/16	24x1/2	24x3/8	24x3/8	24x3/8	24x1/2	24x11/16	a	Flange Angles (Holes out for tension)	2	4x4x1/2	4x4x1/2	4x4x3/8	4x4x3/8	4x4x1/2	4x4x1/2	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8
23x7/16 * *	23x7/16 * *	23x3/8 * *	23x3/8 * *	23x7/16 * *	23x3/8 * *	23x3/8 * *	23x3/8 * *	23x3/8 * *	23x3/8 * *	23x3/8 * *	23x3/8 * *	23x3/8 * *	b	1st Web Plate (Holes out for tension)	3	24x1/2	24x1/2	24x3/8	24x3/8	24x1/2	24x1/2	24x3/4	24x3/16	24x3/8	24x3/8	24x3/16	24x3/4
24 x 7/16					24x7/16								c	Cover Plates	2	22x3/8 * *	23x7/16 * *	23x3/8 * *	23x3/8 * *	23x7/16 * *	22x3/8 * *	23x3/8 * *	24x3/16	23x3/8 * *	23x3/8 * *	23x3/8 * *	24x3/4
													g	2nd Web Plate	3	24 x 1/2					24 x 1/2						
						320	276	264	252	264	276	320	25	Length In.							320	276	264	252	264	276	320
						7.60	7.60	7.70	7.70	7.70	7.60	7.60	26	Min. Radius of Gyration In.							7.47	7.56	7.70	7.70	7.70	7.56	7.47
24,000	24,000	18,000	18,000	24,000	24,000	19,180	19,390	14,700		14,700	19,390	19,180	27	Allowable Stress Lbs/Sq.In.	24,000	24,000	18,000	18,000	24,000	24,000	19,150	19,390	14,700		14,700	19,390	19,150
67.50	47.38	39.19	39.19	47.38	67.50	57.75	45.19	39.19	39.19	39.19	45.19	57.75	28	Actual Gross Area Sq.In.	72.00	50.38	39.19	39.19	50.38	72.00	57.19	48.19	39.19	39.19	39.19	48.19	57.19
56.50	39.01	32.44	32.44	39.01	56.50	56.20	38.52	31.88	31.88	31.88	38.52	56.20	29	Net Area Sq.In.	60.50	41.63	32.44	32.44	41.63	60.50	57.19	42.79	31.88	31.88	31.88	42.79	57.19
23,740	23,690	15,100	15,100	23,690	23,740	17,620	18,960	13,170	5,550	13,170	18,960	18,620	30	Actual Unit Stress Lbs/Sq.In.	22,980	23,080	15,670	15,670	23,080	22,980	17,910	17,900	13,990	6,090	13,990	17,900	18,940
S	S	C	C	S	S	S	S	C	C	C	S	S	31	Material	S	S	C	C	S	S	S	S	C	C	C	S	S



All dead load and live load stresses are in kips.
Line 29,- Net area for tension or effective gross area for compression.



S = Special Steel
C = Carbon Steel
* = 11" Hole
** = 10" Hole



Truss dimensions are shown on Framing Plan, Sh. 23.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
STRESS SHEET UNIT 6
NORTH AND SOUTH TRUSSES
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE D.M.C. DATE 5-6-54
TRCD. R.P.S. DATE 9-9-54
CKD. W.W.L. DATE 5-19-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.77

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

76
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U502

1 Spl. Pl. 22 x ¾ - 5
1 Fill 22 x ⅜ - 5
Diaphragm "D"
1 Fill 12 x 3/16
1 Fill 12 x ⅜
1 Spl. Pl. 22 x ¾ - 5
1 Fill 23 x 5/16 - 5
1 Spl. Pl. 10 x ¾ - 5

U501

Diaphragm "A"
1 Fill 12 x 1 5/16
1 Fill 12 x 1/16

U500

1 Fill - 12 x 1 5/16
Diaphragm "A"
1 Fill - 12 x 1 9/16

U503 – U502
4 Ls 8 x 6 x ¾ - 5
2 Pls. 30 x ⅜ - 5
1 Pl. 22 x ⅜ - 5
1 Pl. 22 x ¾ - 5

U502 – U501
4 Ls 8 x 6 x 7/16 - 5
2 Pls. 30 x ⅜ - 5
1 Pl. 23 x 5/16 - 5
1 Pl. 23 x ⅜ - 5

U501 – U500
4 Ls 8 x 6 x 7/16 - 5
2 Pls. 30 x ⅜ - 5
1 Pl. 23 x 5/16 - 5
1 Pl. 23 x ⅜ - 5

DIAPHRAGM "A"
4 Ls 8 x 4 x ½
4 Ls 4 x 4 x ½
1 Pl. 23 x ½
2 Fills - 14 x 7/16

DIAPHRAGM "B"
4 Ls 4 x 4 x ½ (Bent)
2 Ls 4 x 4 x ½
1 Pl. - 22 x ½ (Bent)

DIAPHRAGM "C"
8 Ls 4 x 4 x ½
1 Pl. - 19 x ½
4 Fills 7 x ½
4 Fills 7 x 1 3/16

DIAPHRAGM "D"
2 Ls 8 x 4 x ½
2 Ls 8 x 6 x ½
4 Ls 4 x 4 x ½
2 Fills 8 x ¾
2 Fills 8 x 7/16
1 Pl. - 21 x ½

DIAPHRAGM "E"
3 Ls 4 x 4 x ⅜
1 Pl. 21 x 7/16 (Bent)
2 Fills 4 x 7/16
1 Fill 4 x ⅜
1 Fill 11 x 7/16

L503 – L502
4 Ls 8 x 6 x ¾ - 5
4 Pls. 30 x ¾ - 5
1 Pl. 22 x ⅜ - 5
1 Pl. 22 x ½ - 5

L502 – L501
4 Ls 8 x 6 x 7/16 - 5
4 Pls. 30 x 9/16 - 5
1 Pl. 22 x ⅜ - 5
1 Pl. 22 x ½ - 5

L501 – L500
4 Ls 8 x 6 x 7/16 - 5
2 Pls. 30 x ⅜ - 5
1 Pl. 22 x ⅜ - 5
1 Pl. 22 x ½ - 5

L503 – L502
2 Pls. 23 x ⅜ - 5
2 Pls. 26 x ⅜ - 5
4 Ls. 4 x 4 x 7/16 - 5
50.173'
1'-5⅜" b-b Ls
2'-1⅜" o-o

U502 – M502 – L502
4 Ls 4 x 4 x 7/16 - 5
4 Pls. 26 x ½ - 5
2 Pls. 23 x 7/16 - 5
4 Ls 4 x 4 x ⅜ - 5 (M502 – L502)
43.500'
1'-3⅜" b-b Ls
2'-1⅜" o-o

U502 – L501
2 Pls. 23 x ⅜ - 5
4 Pls. 24 x 9/16 - 5
4 Ls 4 x 4 x ⅜ - 5
43.856'
1'-3⅜" b-b Ls
2'-1⅜" o-o

U501 – L501
4 Ls 4 x 4 x ⅜ - 5
4 Pls. 24 x ½ - 5
2 Pls. 23 x 7/16 - 5
36.032'
1'-3⅜" b-b Ls
2'-1⅜" o-o

U501 – L500
2 Pls. 22 x 7/16 - 5
4 Pls. 24 x 9/16 - 5
4 Ls 4 x 4 x ½ - 5
38.055'
1'-3⅜" b-b Ls
2'-1⅜" o-o

U500 – L500
4 Ls 4 x 4 x ⅜ - 5
2 Pls. 24 x ⅜
2 Pls. 24 x ⅜
2 Pls. 23 x ⅜
25.080'
1'-3⅜" b-b Ls
2'-1⅜" o-o

2'-0¾" b-b Ls
1'-3⅜"
2'-6¾" o-o
25.001'
2 Fills 30 x ⅜ - 5
2 Spl. Pls. 30 x ⅜ - 5
2 Spl. Pls. 30 x ½ - 5 o.s.
Stop 2 Pls. 30 x ⅜ - 5
1 Pl. 12 x 1¼
2 Ls - 3½ x 3½ x ⅜
1 L 4 x 3½ x ½
2 Pls ⅜" - 5
2'-1½" o-o
2'-6¾" o-o
25.001'
2'-1½" o-o
2'-6¾" o-o
22.001'
1 Pl. 12 x 1¼
2 Ls 3½ x 3½ x ⅜
1 Pl. ⅜" - 5
2 Pls. - ½" x 2 Ls 3½ x 3½ x ⅜
2'-1½" o-o
2'-6¾" o-o
27.116'
2'-1½" o-o
2'-6¾" o-o
26.092'
2'-0 3/8" o-o
2'-6¾" o-o
26.319'
2 Ls - 4 x 4 x 7/16 - 5
2 Pls ¾ - 5
2 Ls 3½ x 3½ x ⅜
Mill Joint
2 Spl. Pls. 30 x 7/16 - 5
Stop 2 Pls. 30 x 9/16 - 5
2 Spl. Pls. 14 x 9/16 - 5
2 Spl. Pls. 14 x 11/16 - 5
2 Fills 14 x 3/8 - 5
Stop 2 Pls 30 x ¾ - 5
2 Spl. Pls. 30 x 5/16 - 5
1 Spl. Pl. 22 x ½ - 5
L 4 x 4 x ½
1 Pl. - 1 3/8" - 5.
Diaphragm "C"
L502
L501
Diaphragms "B"
2 Fills 14 x 7/16 - 5
Stop 2 Pls. 30 x 9/16 - 5
10" Dia. Hole
1 Pl. - ½"
2 Pls. - ¾" - 5
10 17/32" ϕ Hole
2 Fills 14 x 7/16 - 5
2 Fills 30 x 9/16 - 5
Stop 2 Pls 8 x 6 x 7/16 - 5
1 Pl. 22 x ⅜ - 5
1 Fill 4 x 9/16
L500
Diaphragms "B"
1 Pl. - ½"
7/8 ϕ High Str. Bolts
See Detail 'A' Sheet #52
Mill to Bear
Mill to Bear
28.500'
3'-0"
6" R
℄ Hole for 10½" Pin

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5

TRUSS DETAILS, UNIT 5 SOUTH
PANELS 502, 501 AND 500

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE C.J.C. DATE 8-2-54
TRCD C.J.C.-H.T.S. DATE 8-20-54
CKD. D.M.E. DATE 11-8-54

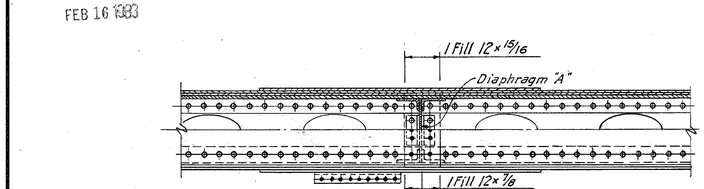
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

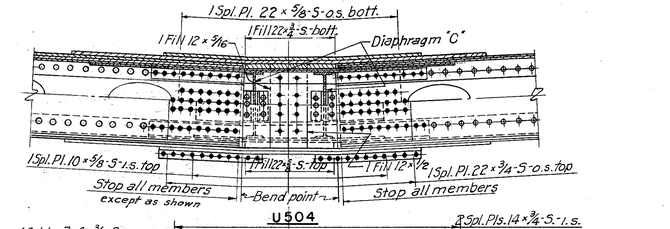
914-1A SHEET- 2.76

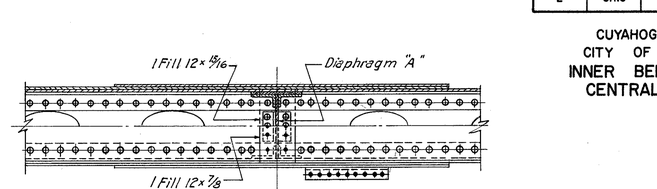
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

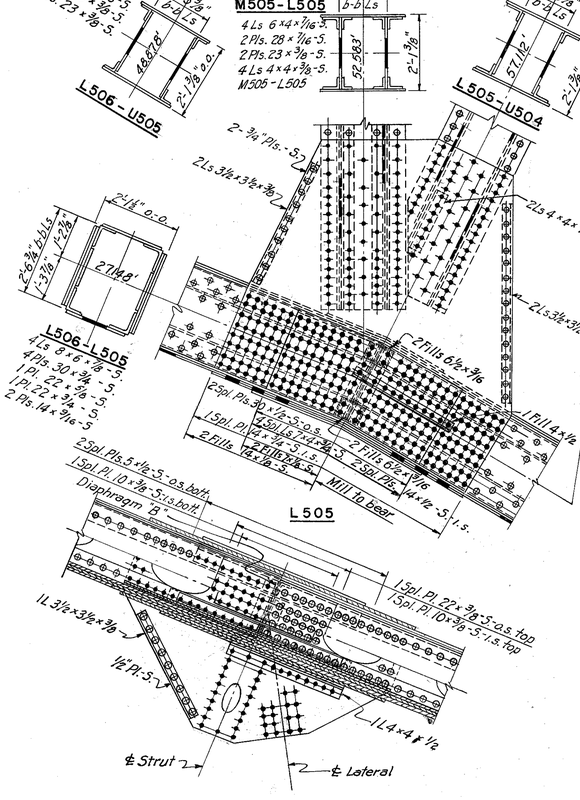
75
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT









PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5
TRUSS DETAILS UNIT 5, SOUTH
PANELS 505, 504, 503

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE V.D.G. DATE 8-11-54
TRCD N.T.S. DATE 8-26-54
CKD. J.G.S. DATE 10-26-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.75

292

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

74
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U509

U508

U507

U506

U510-U509
4 Ls 8×6×3/4 -5
4 Pls. 30×9/16 -5
2 Pls. 14×3/8 -5
1 Pl. 22×5/8 -5
1 Pl. 22×3/4 -5

U509-508
4 Ls 8×6×3/4 -5.
4 Pls. 30×9/16 -5.
2 Pls. 14×3/8 -5.
1 Pl. 22×5/8 -5.
1 Pl. 22×3/4 -5.

U508-U507
4 Ls 8×6×3/4 -5.
4 Pls. 30×9/16 -5.
1 Pl. 22×5/8 -5.
1 Pl. 22×3/4 -5.
2 Pls. 14×3/4 -5.

U507-U506
4 Ls 8×6×3/4 -5.
4 Pls. 30×9/16 -5.
1 Pl. 22×5/8 -5.
1 Pl. 22×3/4 -5.
2 Pls. 14×3/4 -5.

U506-U505
4 Ls 8×6×3/4 -5.
4 Pls. 30×5/8 -5.
2 Pls. 14×3/4 -5.
1 Pl. 22×5/8 -5.
1 Pl. 22×3/4 -5.

U510-L509
4 Ls 4×4×3/8
2 Pls. 24×3/8
2 Pls. 23×3/8

U509-L509
4 Ls 4×4×3/8
2 Pls. 24×3/8
2 Pls. 23×3/8

U508-L509
4 Ls 4×4×3/8 -5
2 Pls. 24×3/8 -5
2 Pls. 23×3/8 -5

U508-L508
4 Ls 4×4×3/8 -5.
2 Pls. 24×7/16 -5.
2 Pls. 23×3/8 -5.

L508-U507
4 Ls 4×4×3/8
2 Pls. 24×7/16
2 Pls. 23×3/8

U507-L507
4 Ls 4×4×3/8 -5.
2 Pls. 24×7/16 -5.
2 Pls. 23×3/8 -5.

M506-U506-L506
4 Ls 4×4×3/8 -5.
2 Pls. 26×5/8 -5.
2 Pls. 23×3/8 -5.
4 Ls 4×4×3/8 -5
(i.s. M506-L506 only)

L507-U506
4 Ls 4×4×1/2 -5.
2 Pls. 24×1/2 -5.
2 Pls. 24×3/8 -5.

L506-U505
4 Ls 4×4×3/8 -5.
2 Pls. 26×3/8
2 Pls. 23×3/8

L509
Stop 2 Pls. 14×3/8 -5. l.s.
Diaphragm "B"

L509-L508
4 Ls 8×6×3/4 -5
2 Pls. 30×3/4 -5
2 Pls. 14×3/8 -5
1 Pl. 22×5/8 -5
1 Pl. 22×3/4 -5

L508
Stop 2 Pls. 14×3/8 -5.
Diaphragm "B"

L508-U507
4 Ls 8×6×1/8 -5.
4 Pls. 30×3/4 -5.
1 Pl. 22×5/8 -5.
1 Pl. 22×3/4 -5.

L507
Stop 2 Pls. 14×3/8 l.s.
Diaphragm "B"

L507-L506
4 Ls 8×6×1/8 -5.
4 Pls. 30×3/4 -5.
2 Pls. 14×3/8 -5.
1 Pl. 22×5/8 -5.
1 Pl. 22×3/4 -5.

L506
Diaphragm "E"

L506-L505
4 Ls 8×6×1/8 -5.
4 Pls. 30×4/4 -5.
2 Pls. 14×3/16 -5.
1 Pl. 22×5/8 -5.
1 Pl. 22×3/4 -5.

L510-L509
4 Ls 8×6×3/4 -5
2 Pls. 30×3/4 -5
1 Pl. 22×5/8 -5
1 Pl. 22×3/4 -5

Note: For Diaphragm Details See Sh. 73

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5
TRUSS DETAILS UNIT 5 - SOUTH
PANELS 509, 508, 507, 506
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE G.A.R. DATE 8-4-54
TRD. J.J.S. DATE 9-7-54
CKD E.J.C. DATE 10-22-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.74

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

73
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U512

1-Splice Pl. 22 x 3/8 -S, o.s. Bottom
1-Fill 12 x 7/16 -S Btm.
1-Splice Pl. 11 x 1/2 -S
1-L 4 x 3 1/2 x 1/2
2-Splice Pls. 14 x 3/8 -S, i.s.
4-Splice Ls 7 x 4 x 1/2 -S
2-Splice Pls. 30 x 3/8 -S, o.s.
Stop 2-Pls. 14 x 3/8 -S
1-Splice Pl. 22 x 3/8
Diaphragm "A"
1-Splice Pl. 22 x 1/2 -S
2'-1 3/8" O-o. webs
25.001'
2'-0 3/8" D. L.
1'-2 7/8"
1'-3 3/8"
2'-6 3/4" D. L.
1-Pl. 12 x 1/2 Mill Ends to bear
2-Clip Ls 4 x 4 x 3/8 -S
2-Gusset Pls. 5/8 -S
2-Ls 3 1/2 x 3 1/2 x 5/8
4-Ls 8 x 6 x 3/8 -S
4-Pls. 30 x 7/16 -S
2-Pls. 14 x 3/8 -S
1-Pl. 22 x 5/8 -S
1-Pl. 22 x 1/4 -S
4'-5 3/8" D-b. Ls
2'-1 7/8" O-o.
48.076'
L512-U513
4-Ls 4 x 4 x 3/8 -S
2-Pls. 26 x 1/2 -S
2-Pls. 24 x 3/8 -S
4-Ls 4 x 4 x 3/8 -S (in L512 M512 only)
42.000'
L512-M512-U512
44.932'
L511-U512
4-Ls 4 x 4 x 7/16 -S
2-Pls. 24 x 3/8 -S
2-Pls. 23 x 3/8 -S
2-Ls 3 1/2 x 3 1/2 x 5/8
2-Clip Ls 4 x 4 x 3/8 -S
2-Gusset Pls. 5/8 -S
25.433'
L511-L512
4-Ls 8 x 6 x 3/8 -S
4-Pls. 30 x 3/8 -S
1-Pl. 22 x 5/8 -S
1-Pl. 22 x 3/4 -S
2-Splice Pls. 30 x 7/16 -S
2-Splice Pls. 14 x 3/8 -S
2-Splice Ls 7 x 4 x 3/8 -S
4-Splice Ls 4-Fills 7 x 3/8 -S
4-Fills 4 x 3/8 -S
sides (T.& B.)
Mill Joint to bear
27.148'
L512-L513
4-Ls 8 x 6 x 3/8 -S
4-Pls. 30 x 3/8 -S
1-Pl. 22 x 5/8 -S
1-Pl. 22 x 3/4 -S
L512
1-Splice Pl. 22 x 3/8 -S, o.s. Top
L-4 x 4 x 1/2
1-Gusset Pl. 1/2 -S

U511

1-Fill 12 x 15/16 -S Bottom
1-Fill 12 x 7/8 -S Top
1-L 4 x 3 1/2 x 1/2
Stop 2-Pls. x 3/8 -S, i.s.
2-Fills 16 1/2 x 3/8
Diaphragm "A"
2'-1 5/8" O-o. webs
25.001'
2'-0 3/8" D. L.
1'-3 3/8"
2'-6 3/4" D. L.
1-Pl. 12 x 1/2 Mill Ends to bear
2-Ls 3 1/2 x 3 1/2 x 5/8
2-Gusset Pls. 1/2 -S
4-Ls 8 x 6 x 3/8 -S
4-Pls. 30 x 7/16 -S
2-Pls. 14 x 3/8 -S
1-Pl. 22 x 5/8 -S
1-Pl. 22 x 3/4 -S
4'-5 3/8" D-b. Ls
2'-1 7/8" O-o.
37.333'
L511-U511
4 Ls 4 x 4 x 7/16
2 Pls. 24 x 7/16
2 Pls. 23 x 7/16
41.136'
L510-U511
4-Ls 4 x 4 x 7/16
2-Pls. 24 x 7/16
2-Pls. 23 x 7/16
2-Clip Ls 4 x 4 x 3/8 -S
2-Gusset Pls. 1/2 -S
2-Ls 3 1/2 x 3 1/2 x 5/8
25.433'
L510-L511
4-Ls 8 x 6 x 5/8 -S
4-Pls. 30 x 3/4 -S
1-Pl. 22 x 5/8 -S
1-Pl. 22 x 3/4 -S
Diaphragm "B"
2-Fills 14 x 5/8
L511
1-L 4 x 4 x 1/2
1-Pl. 1/2 -S

U510

1-Splice Pl. 22 x 1/2 -S, o.s. Bottom
1-Fill 12 x 7/16 -S Bottom
Diaphragm "A"
1-Splice Pl. 11 x 1/2 -S, i.s.
1-Splice Pl. 22 x 3/8 -S
1-L 4 x 3 1/2 x 1/2
1-Splice Pl. 22 x 1/2 -S
2-Splice Pls. 14 x 3/8 -S, i.s.
2-Splice Pls. 30 x 3/8 -S, o.s.
4-Splice Ls 7 x 4 x 3/4 -S, i.s.
Cut 2-Pls. 14 x 3/8 -S, i.s.
Cut all of chord except 2-Pls. 14 x 3/8
Cut 2-Pls. 14 x 3/8 -S, i.s.
Cut all of chord except 2-Pls. 14 x 3/8
2'-1 3/8" O-o. webs
25.001'
2'-0 3/8" D. L.
1'-2 7/8"
1'-3 3/8"
2'-6 3/4" D. L.
1-Pl. 12 x 1/2 Mill Ends to bear
2 Fills 14 x 1/4
2-Ls 3 1/2 x 3 1/2 x 1/8
2-Gusset Pls. 5/8 -S
4-Ls 8 x 6 x 3/8 -S
4-Pls. 30 x 7/16 -S
2-Pls. 14 x 3/8 -S
1-Pl. 22 x 5/8 -S
1-Pl. 22 x 3/4 -S
4'-5 3/8" D-b. Ls
2'-1 7/8" O-o.
32.667'
L510-U510
4-Ls 4 x 4 x 3/8
2-Pls. 24 x 3/8
2-Pls. 23 x 3/8
41.136'
L509-U510
4-Ls 4 x 4 x 7/16
2-Pls. 24 x 7/16
2-Pls. 23 x 7/16
2-Gusset Pls. 1/2 -S
2-Ls 3 1/2 x 3 1/2 x 1/8
2-Ls 3 1/2 x 3 1/2 x 3/8
2-Fills 8 1/2 x 1/2
25.001'
L509-L510
4-Ls 8 x 6 x 3/4 -S
4-Pls. 30 x 3/4 -S
1-Pl. 22 x 5/8 -S
1-Pl. 22 x 3/4 -S
Diaphragm "B"
1-Fill 4 x 1/2
2-Splice Pls. 14 x 1/2 -S
2-Splice Pls. 30 x 1/2 -S, o.s.
4-Fills 4 x 1/2 -S
Mill Joint
4-Fills 7 x 1/2 -S
2-Splice Pls. 14 x 3/8 -S
4-Splice Ls 7 x 4 x 1/2 -S
L510
1-Splice Pl. 22 x 1/2 -S, o.s. top
1-L 4 x 4 x 1/2
1-Gusset Pl. 3/4 -S

DIAPHRAGM "A"
4-Ls 8 x 4 x 1/2
4-Ls 4 x 4 x 1/2
1-Pl. 1/2
Mill to bear

DIAPHRAGM "B"
6-Ls 4 x 4 x 1/2
1-Pl. 1/2

DIAPHRAGM "E"
8-Ls 4 x 4 x 1/2
1-Pl. 1/2

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17.5
TRUSS DETAILS UNIT 5- SOUTH
PANELS 512, 511, 510

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE VEA DATE 7-23-54
TRCD. JDB DATE 8-25-54
CKD. C.J.C. DATE 10-26-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.73

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

72
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U515

U515–U516
Pl. 22 x 5/8 -s
4-L5 8 x 6 x 1/2 -s
2-Pls. 30 x 3/8 -s
Pl. 22 x 1/2 -s

U515–M515–L515
2-Pls. 28 x 5/8 -s.
4-L5 6 x 4 x 1/2 -s
2-Pls. 23 x 7/16 -s
4-L5 4 x 4 x 5/16 -s, i.s. below M515, see Sheet 31 for cut-off point

U514

U514–U515
Pl. 22 x 3/8 -s
4-L5 8 x 6 x 1/2 -s
2-Pls. 30 x 3/8 -s
2-Pls. 30 x 1/2 -s
Pl. 22 x 1/2 -s

U514–M514–L514
2-Pls. 30 x 3/8 -s
4-L5 7 x 4 x 1/2 -s
2-Pls. 23 x 7/16 -s
4-L5 4 x 4 x 5/16 -s, i.s. below M514
See sheet 34 for cut-off point

U514–L515
Pl. 22 x 3/8 -s
4-L5 8 x 6 x 1/2 -s
2-Pls. 30 x 3/8 -s
2-Pls. 30 x 1/2 -s
Pl. 22 x 1/2 -s

U513–U514
Pl. 22 x 5/8 -s
4-L5 8 x 6 x 1/2 -s
4-Pls. 30 x 5/16 -s
Pl. 22 x 3/4 -s

U513

U513–M513–L513
2-Pls. 28 x 7/16 -s
4-L5 6 x 4 x 5/16 -s.
2-Pls. 23 x 5/16 -s.
4-L5 4 x 4 x 5/16 -s, i.s. below M513. See sheet 31 for cut-off point.

U512–U513
Pl. 22 x 5/8 -s
4-L5 8 x 6 x 1/2 -s
4-Pls. 30 x 5/8 -s
2-Pls. 14 x 5/8 -s
Pl. 22 x 3/4 -s

L515–L516
Pl. 22 x 5/8 -s
4-L5 8 x 6 x 1/2 -s
4-Pls. 30 x 5/8 -s
Pl. 22 x 1/2 -s

L514–L515
Pl. 22 x 5/8 -s
4-L5 8 x 6 x 1/2 -s
4-Pls. 30 x 5/8 -s
Pl. 22 x 1/2 -s

L513–L514
Pl. 22 x 5/8 -s
4-L5 8 x 6 x 1/2 -s
4-Pls. 30 x 5/8 -s
Pl. 22 x 3/4 -s

L512–L513
Pl. 22 x 5/8 -s
4-L5 8 x 6 x 1/2 -s.
4-Pls. 30 x 5/8 -s.
2-Pls. 14 x 5/8 -s.
Pl. 22 x 1/2 -s.

L515

L514

L513

DIAPHRAGM "A"
4-L5 8 x 4 x 1/2
4-L5 6 x 4 x 1/2
1-1/2" Pl.

DIAPHRAGM "B"
20-I 65.4
4-L5 6 x 4 x 1/2

DIAPHRAGM "C"
4-L5 4 x 4 x 1/2
4-L5 6 x 4 x 1/2
1-3/8" Pl.

SECTION A-A

Note: For ladder and walkway detail see Sheet 101.

Note: Cut 20 I 65.4 to required depth and weld with double-V butt weld.

Note: Fill post with concrete up to line marked "Conc.".

Note: For additional details of connection of strut to gusset plate see Sheet 34.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17 5
TRUSS DETAILS, UNIT 5 SOUTH
PANELS 515, 514, AND 513
CLEVELAND CUYAHOGA COUNTY OHIO

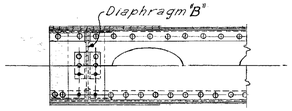
SCALE 3/4" = 1'-0"
MADE F.K.D. DATE 8-5-54
TRCD. F.K.D. DATE 9-1-54
CKD. D.E.R. DATE 10-4-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.72

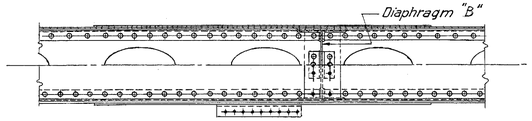
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

71
122

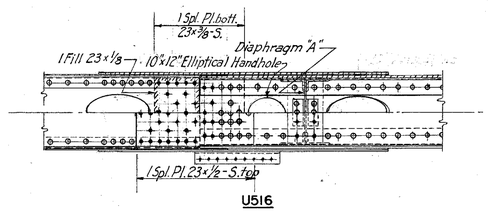
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



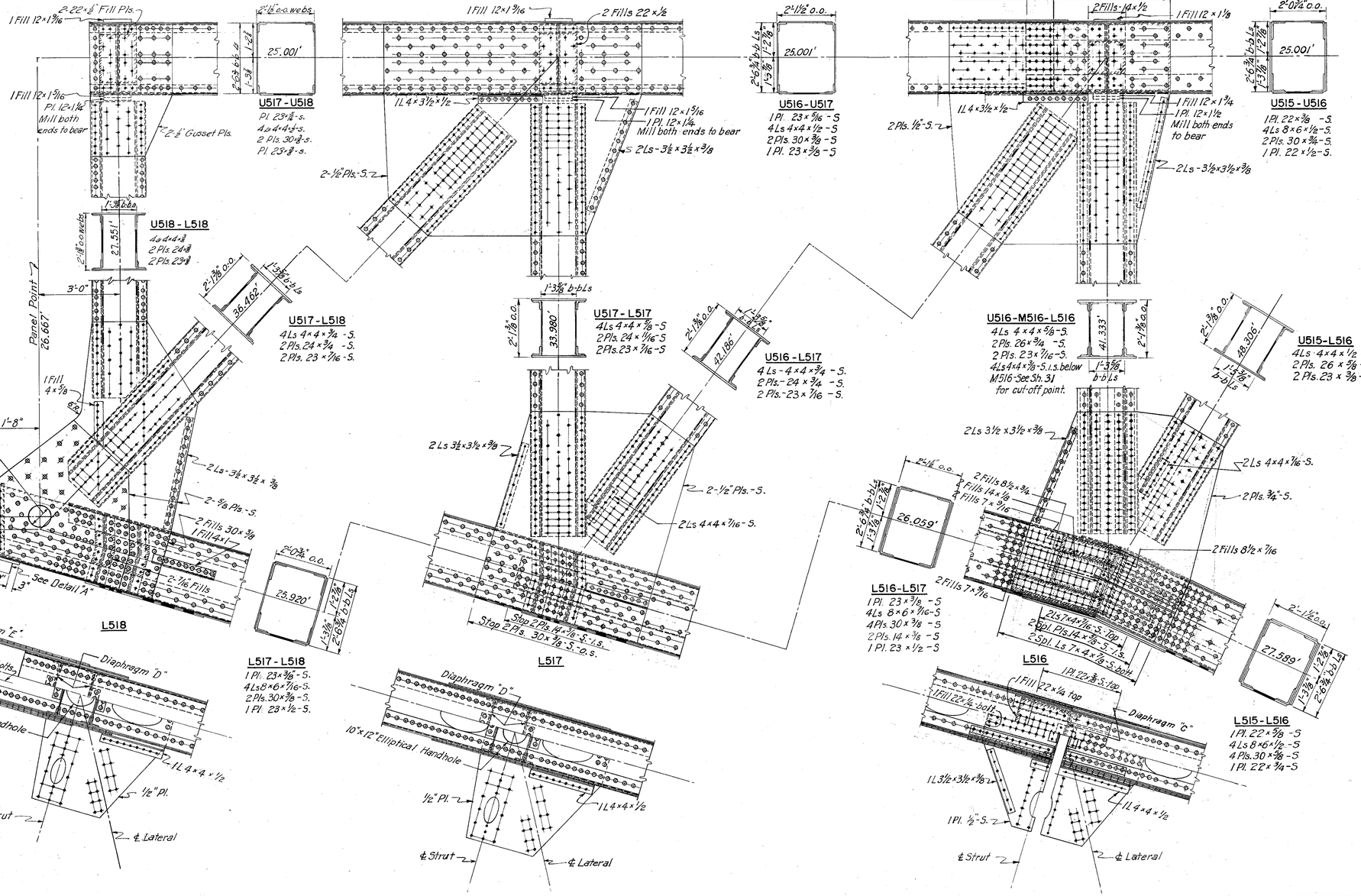
U518

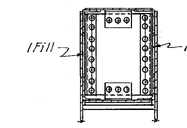


U517

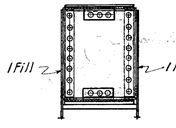


U516

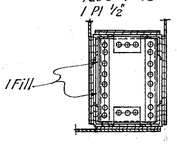




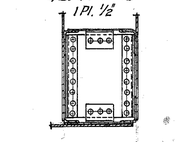
DIAPHRAGM "A"
4 Ls 8"x4"x1/2"
4 Ls 6"x4"x1/2"
1 Pl. 1/2"



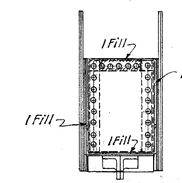
DIAPHRAGM "B"
4 Ls 8"x4"x1/2"
4 Ls 4"x4"x1/2"
1 Pl. 1/2"



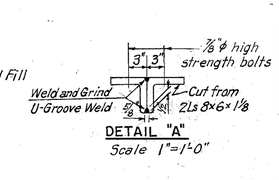
DIAPHRAGM "C"
4 Ls 4"x4"x1/2"
4 Ls 6"x4"x1/2"
1 Pl. 1/2"



DIAPHRAGM "D"
4 Ls 4"x4"x1/2"-bent
1 L 6"x4"x1/2"
1 L 6"x4"x1/2"-bent
1 Pl. 1/2" - bent



DIAPHRAGM "E"
3 Ls 4"x4"x3/8"
1 Pl. 22"x7/16"-bent
1 Fill 4"x3/8"
2 Fills 4"x7/16"
1 Fill 11"x7/16"



DETAIL "A"
Scale 1"=1'-0"

PART 3

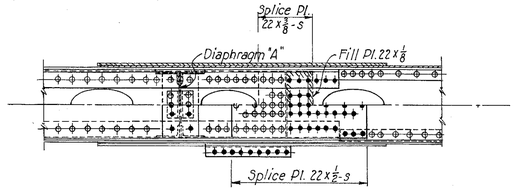
U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
TRUSS DETAILS, UNIT 5 SOUTH
PANELS 518, 517, AND 516
CLEVELAND CUYAHOGA COUNTY OHIO

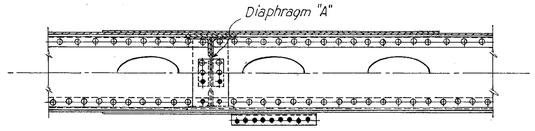
SCALE 1/2" = 1'-0" except as noted
MADE J.T.K. DATE 8-17-54
CK'D DER DATE 10-9-54
TRCD ??? DATE 8-31-54
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.71

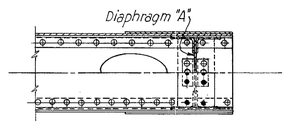
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

70
122

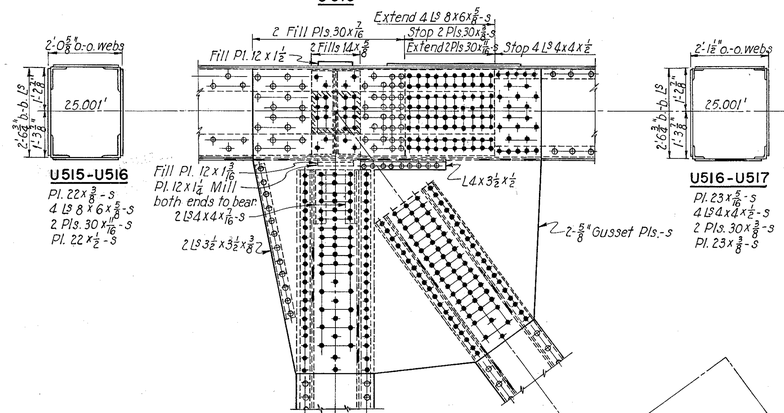
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



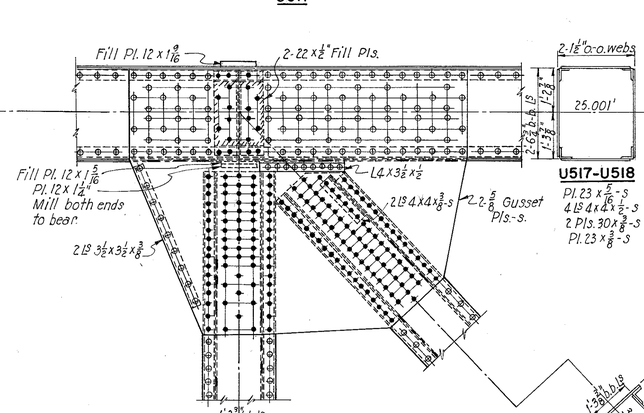




U516



U517



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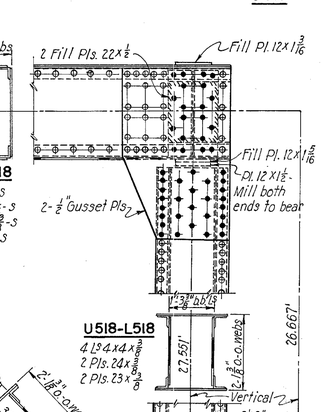
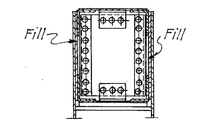
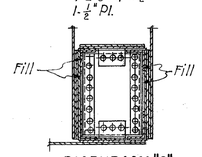
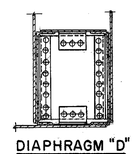




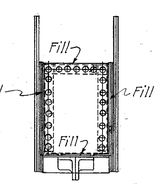
DIAPHRAGM "A"
4 L's 8 x 4 x 1/2
4 L's 6 x 4 x 1/2
1 - 1/2" Pl.



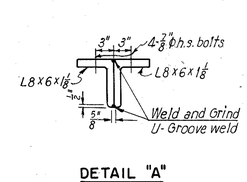
DIAPHRAGM "C"
4 L's 4 x 4 x 1/2
4 L's 6 x 4 x 1/2
1 - 1/2" Pl.



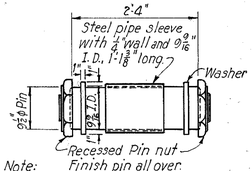
DIAPHRAGM "D"
4 L's 4 x 4 x 1/2 - bent
1 L 6 x 4 x 1/2
1 L 6 x 4 x 1/2 - bent
1 - 1/2" Pl. - bent



DIAPHRAGM "E"
3 L's 4 x 4 x 3/8
Web Pl. 22 x 7/16
1 Fill Pl. 4 x 3/8
2 Fill Pls. 4 x 7/16
1 Fill Pl. 11 x 7/16

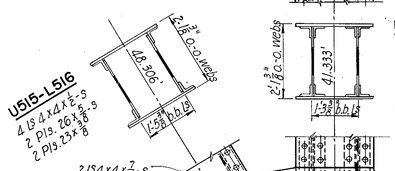


DETAIL "A"
Scale: 1" = 1'-0"



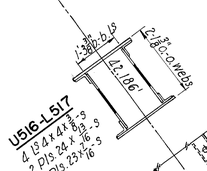
PIN DETAIL
Scale: 3/4" = 1'-0"

U515-L516



U516-M516-L516

U516-U517



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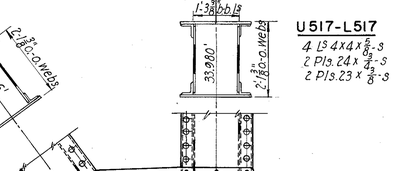
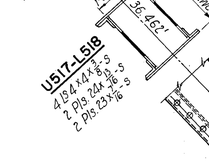
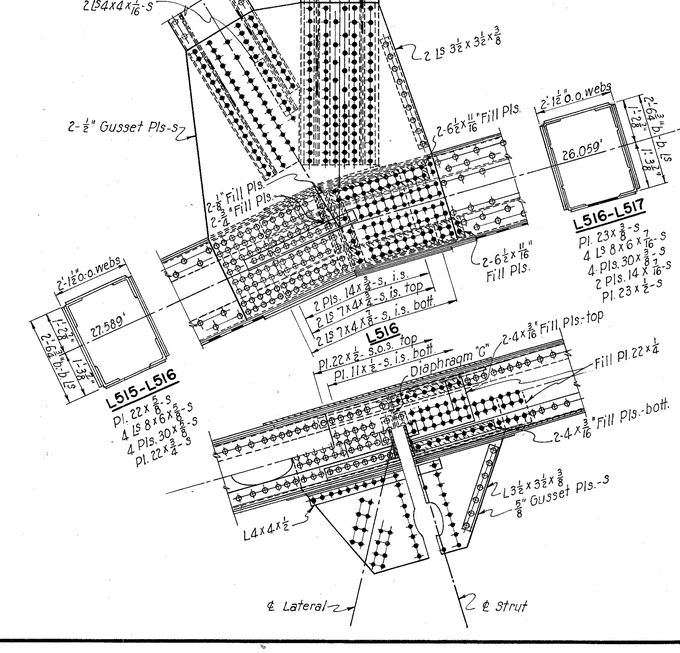


U517-U518



L516



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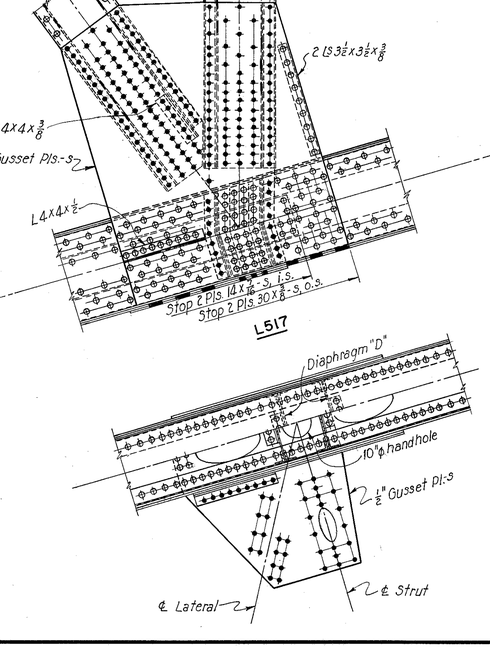

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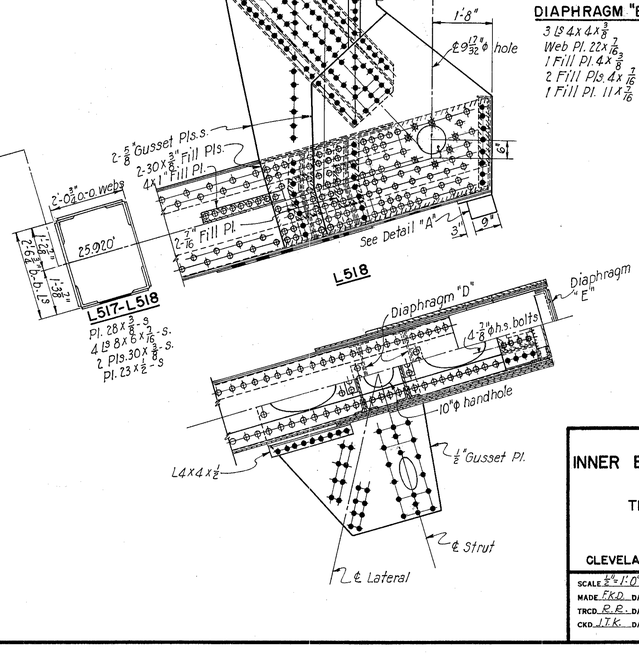


PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5
TRUSS DETAILS, UNIT 5 NORTH
PANELS 516, 517, AND 518
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3/4" = 1'-0" or as shown
MADE FKD DATE 6-10-54
TRCD. R.E. DATE 1-10-55
CKD. J.T.K. DATE 2-9-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.70

230

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI [illegible]	

69
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

Diephragm A

L 4x3½x⅜

U513

Stop 2 Pls. 14'x⅜-s, i.s.
Fill Pl. 12'x1½
2 Fill Pls. 14'x⅜

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-5⅜"
1'-2⅝"
25.001'

U512-U513
1 Pl. 22'x⅜-s
4 Ls 8'x6'x⅜-s
4 Pls. 30'x⅜-s
2 Pls. 14'x⅜-s
1 Pl. 22'x¾-s

Fill Pl. 12'x⅜
Pl. 12'x½-mill ends to bear
2 Ls 3½'x3½'x⅜
2 Ls 4'x4'x⅜-s
2 Ls 3½'x3½'x⅜
2-½" Gusset Pls-s

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-5⅜"
1'-2⅝"
26.016'

U513-U514
1 Pl. 22'x⅜-s
4 Ls 8'x6'x⅜-s
4 Pls. 30'x⅜-s
1 Pl. 22'x¾-s

2'-1⅛" o-o webs
b.b. ls
1'-3⅜"
48.878'

L512-U513
2 Pls. 26'x⅜-s
4 Ls 4'x4'x⅜-s
2 Pls. 23'x⅜-s

1'-3⅜"
b.b. ls
52.583'
2'-1⅛" o-o webs

U513-M513-L513
2 Pls 28'x⅜-s
4 Ls 6'x4'x⅜-s
2 Pls 23'x⅜-s
4 Ls 4'x4'x⅜ i.s. below M513, See sh. 31 for cut-off point.

Pl. 22'x⅜-s, top
2 Pls. 6'x⅜-s, top
Pl. 22'x⅝-s, bott.
Pl. 10'x½-s, i.s. top
Section same as U513-U514
Diephragm B
Fill Pl. 22'x¼ bott.
2 Fill Pls. 3½'x⅛
Fill Pl. 12'x⅝-top
2 Fill Pls. 3½'x⅛
Fill Pl. 22'x¼-top

U514

2 Pls. 30'x⅜-s, o.s.
2 Ls 7'x4'x⅜-s, i.s. top
2 Ls 7'x4'x⅜-s, i.s. bott.
2 Pls. 14'x⅜-s, i.s.
Stop member
Stop member
2 Fill Pls. 6½'x¼
2 Fill Pls. 14'x⅛

For details and connections of access walkway and ladders to piers, see Sh. 101.

L 4x3½x½
Fill Pl. 12'x⅝
Slot for Pl. 12'x1¼
L 4x3½x½
2 Fill Pls. 6½'x¼
2 Ls 3½'x3½'x⅜
2 Ls 3½'x3½'x⅜
1-⅜" Fill Pl.-s
2 Ls 4'x4'x7/16
2-⅝" Gusset Pls. 1⅜" Fill Pl.-s
2 Ls 4'x4'x⅜-s

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-3⅜"
1'-2⅝"
26.015'

U514-U515
Pl. 22'x⅜-s
4 Ls 8'x6'x⅜-s
2 Pls. 30'x⅜-s
Pl. 22'x½-s

L513-U514
2 Pls. 28'x7/16
4 Ls 6'x4'x⅜
2 Pls. 23'x⅜

1'-3⅜"
b.b. ls
58.641'
2'-1⅛" o-o webs

U514-L515
2 Pls 28'x⅜-s
4 Ls 4'x4'x⅜-s
2 Pls. 23'x⅜-s

1'-3⅜"
b.b. ls
59.056'
2'-1⅛" o-o webs

U514-M514-L514
2 Pls. 30'x⅜-s.
4 Ls 7'x4'x⅜-s.
2 Pls. 23'x⅞-s.

1'-3⅜"
b.b. ls
63.000'
2'-1⅛" o-o webs

U515

Fill Pl. 12'x1½
2 Fill Pls. 14'x⅝
Extend 2 Pls. 30'x 7/16-s

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-3⅜"
1'-2⅝"
25.001'

U515-U516
Pl. 22'x⅝-s.
4 Ls 8'x6'x⅝-s
2 Pls. 30'x 7/16-s
Pl. 22'x½-s

Fill Pl. 12'x1 3/16
Pl. 12'x1¼ Mill ends to bear
2 Ls 3½'x3½'x⅜
L 4x3½x½
2 Ls 4'x4'x 7/16-s
2-⅝" Gusset Pls-s

U515-M515-L515
2 Pls. 28'x⅜-s
4 Ls 6'x4'x⅜-s
2 Pls. 23'x⅜-s
4 Ls 4'x4'x⅜-s, i.s. below M515, See Sheet 31 for cut-off point.

1'-3⅜"
b.b. ls
53.000'
2'-1⅛" o-o webs

U515-L516
2 Pls. 26'x⅜-s
4 Ls 4'x4'x⅜-s
2 Pls. 23'x⅜-s

1'-3⅜"
b.b. ls
48.306'
2'-1⅛" o-o webs

Fill Pl.
Fill Pl.

DIAPHRAGM "A"
4 Ls 8'x4'x½
4 Ls 6'x4'x½
1-½" Pl.

10"ϕ handhole

Note: Cut 20I 65.4 to required depth and weld with double-v. butt weld.

DIAPHRAGM "B"
20I 65.4
4 Ls 6'x4'x½
2 Fill Pls. 14'x⅜
2 Fill Pls. 6'x⅛

Fill Pl.
Fill Pl.

DIAPHRAGM "C"
4 Ls 4'x4'x½
4 Ls 6'x4'x½
1-½" Pl.

SECTION A-A

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-3⅜"
1'-2⅝"
27.148'

L512-L513
Pl. 22'x⅜-s
4 Ls 8'x6'x⅜-s
4 Pls. 30'x⅜-s
Pl. 22'x¾-s

2 Ls 3½'x3½'x⅜
2 Ls 4'x4'x7/16
2-⅝" Gusset Pls-s
2 Ls 3½'x3½'x⅜
2 Fill Pls. 14'x⅜
2 Ls 7'x4'x⅜ i.s. bolt 2'o" c-c
i.s. top: 2 Pls. 30'x⅜-s, o.s.
2 Pls. 14'x⅜-s, i.s.
Fill Pl. 4'x⅜

L513
Pl. 22'x½-s o.s. top
Pl. 10'x½-s i.s. bott.
Diaphragm "C" See sheet 31
Note: Mill ends of chord members to bear.
L 4x4x½
½" Gusset Pl.-s.
℄ Strut
℄ Lateral

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-5⅜"
1'-2⅝"
29.807'

L513-L514
Pl. 22'x⅝-s
4 Ls 8'x6'x 7/16-s
4 Pls. 30'x⅜-s
Pl. 22'x¾-s

2 Ls 4'x4'x 7/16
2-⅝" Gusset Pls-s
2 Ls 3½'x3½'x⅜
Stop Pl. 22'x⅝-s
Stop Pl. 22'x¾-s
1'-4"

2-¾" Gusset Pls-s
2 Ls 3½'x3½'x⅜
2 Ls 8'x4'x 7/16-s
2 Ls 8'x6'x 7/16-s
2 Ls 8'x8'x 7/16-s, i.s.
2 Fill Pls. 8'x⅜
2 Ls 8'x8'x 7/16-s, i.s.
2 Fill Pls. 8'x¾
2 Ls 8'x8'x¾-s.
L 7'x4'x¾
L 4'x4'x¾
1"ϕ h.s. bolts
2'-0"
Double V weld finish f.s.
L 4'x4'x¾
1"ϕ h.s. bolts
Mill Post and Gusset Pls to bear
Diaphragms inside, see Sh. 34

L514
1"ϕ h.s. bolts
1"ϕ h.s. bolts
1"ϕ h.s. bolts
¾" Gusset Pl.-s
1"ϕ h.s. bolts

Note: Fill post with concrete up to line marked "Conc."

Stop Pl. 22'x⅝-s
Stop Pl. 22'x¾-s
Stop Pl. 28'x⅝-s.
Stop Pl. 22'x¾-s.
1'-4"
Note: For additional details of connection of strut to gusset pl. see sheet 34.

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-5⅜"
1'-2⅝"
30.316'

L514-L515
Pl. 22'x⅝-s
4 Ls 8'x6'x 7/16-s
4 Pls. 30'x¾-s.
Pl. 22'x¾-s.

2 Ls 4'x4'x 7/16-s
2-⅝" Gusset Pls.-s
2 Ls 3½'x3½'x⅜
2 Fill Pls. 14'x⅜
2 Fill Pls. 6½'x½
2 Fill Pls. 14'x¼
Fill Pl. 4'x⅜
Stop Pl. 28'x⅝-s.
Stop Pl. 22'x¾-s.
Note: Mill ends of chord members to bear.
Fill Pl. 3⅛'x¼
Diaphragm "C"
½" Gusset Pl.-s
℄ Strut
℄ Lateral

2'-1⅛" o-o webs
2'-6⅜" b.b. ls
1'-5⅜"
1'-2⅝"
27.589

L515-L516
Pl. 22'x⅜-s
4 Ls 8'x6'x⅝-s
4 Pls. 30'x⅝-s
Pl. 22'x¾-s

2 Ls 3½'x3½'x⅜
2 Fill Pls. 14'x⅜
2 Fill Pls. 6½'x½
2 Fill Pls. 14'x¼
2 Ls 7'x4'x⅜-s i.s. top & bott. 2'o" c-c
2 Pls. 14'x¾-s, i.s.
2 Pls. 30'x⅝-s, o.s.
L515
Pl. 22'x⅝-s, o.s. top
Pl. 10'x½-s, i.s. bott.
Fill Pl. 3⅛'x¼
Fill Pl. 3⅛'x¼
Diaphragm "C"
½" Gusset Pl.-s
℄ Strut
4x4x½
℄ Lateral

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5
TRUSS DETAILS, UNIT 5 NORTH
PANELS 513, 514, AND 515
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½"=1'-0"
MADE F.K.D. DATE 7-28-54
TRCD M.A.C. DATE 1-5-55
CKD J.T.K. DATE 9-2-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.69

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	68
2	OHIO			122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U510

U511

U512

U509-U510
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{5}{8}$-S
2 Pls. 14×$\frac{3}{4}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

U510-U511
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{5}{8}$-S
2 Pls. 14×$\frac{3}{4}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

U511-U512
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{5}{8}$-S
2 Pls. 14×$\frac{3}{4}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

U512-U513
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{5}{8}$-S
2 Pls. 14×$\frac{3}{4}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

DIAPHRAGM "A"
4 ∠ 8×4×$\frac{1}{2}$
4 ∠ 6×4×$\frac{1}{2}$
1 Pl. $\frac{1}{2}$

L509-U510
4 ∠ 4×4×$\frac{3}{8}$-S
2 Pls. 24×$\frac{3}{8}$-S
2 Pls. 23×$\frac{3}{8}$-S

L510-U510
4 ∠ 4×4×$\frac{3}{8}$-S
2 Pls. 24×$\frac{3}{8}$-S
2 Pls. 23×$\frac{3}{8}$-S

L510-U511
4 ∠ 4×4×$\frac{3}{8}$-S
2 Pls. 24×$\frac{3}{8}$-S
2 Pls. 23×$\frac{3}{8}$-S

L511-U511
4 ∠ 4×4×$\frac{3}{8}$-S
2 Pls. 24×$\frac{3}{8}$-S
2 Pls. 23×$\frac{3}{8}$-S

L511-U512
4 ∠ 4×4×$\frac{3}{8}$-S
2 Pls. 24×$\frac{3}{8}$-S
2 Pls. 23×$\frac{3}{8}$-S

L512-M512-U512
4 ∠ 4×4×$\frac{3}{8}$-S
2 Pls. 26×$\frac{7}{16}$-S
2 Pls. 24×$\frac{3}{8}$-S
4 ∠ 4×4×$\frac{3}{8}$-S (i.s. L 512 M512 Only)

L512-U513
4 ∠ 4×4×$\frac{3}{8}$-S
2 Pls. 26×$\frac{7}{16}$-S
2 Pls. 23×$\frac{3}{8}$-S

DIAPHRAGM "B"
6 ∠ 4×4×$\frac{1}{2}$
1 Pl. $\frac{1}{2}$

DIAPHRAGM "E"
8 ∠ 4×4×$\frac{1}{2}$
1 Pl. $\frac{1}{2}$

L509-L510
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{13}{16}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

L510-L511
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{5}{8}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

L511-L512
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{5}{8}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

L512-L513
4 ∠ 8×6×$\frac{3}{4}$-S
4 Pls. 30×$\frac{5}{8}$-S
1 Pl. 22×$\frac{5}{8}$-S
1 Pl. 22×$\frac{3}{4}$-S

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

TRUSS DETAILS UNIT 5 - NORTH
PANELS 510, 511, 512

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=1'-0"
MADE VEA DATE 7-23-54
TRCD. VEA DATE 10-15-54
CKD. J.T.K. DATE 10-27-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.68

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

67
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U 506

U 507

U 508

U 509

L 506

L 507

L 508

L 509

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17.5

TRUSS DETAILS UNIT 5 - NORTH

PANELS 506, 507, 508, 509

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/4" = 1'-0"
MADE VEA DATE 7-2-54
TRCD VEA DATE 10-7-54
CKD. JTK DATE 10-21-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.67

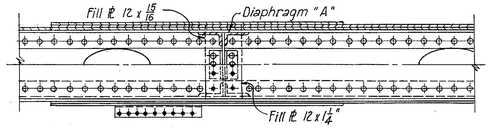
Note: For Details of Diaphragms "A", "B" and "E" See Sheet 68.

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

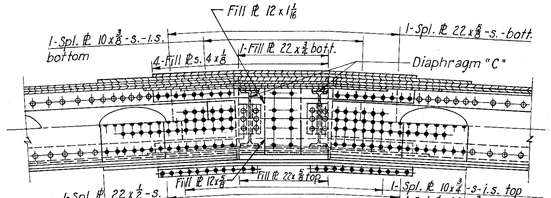
66
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

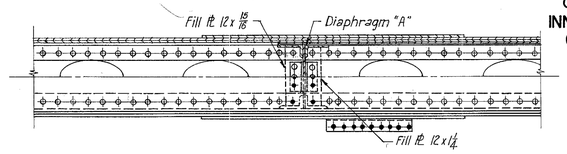
U 503

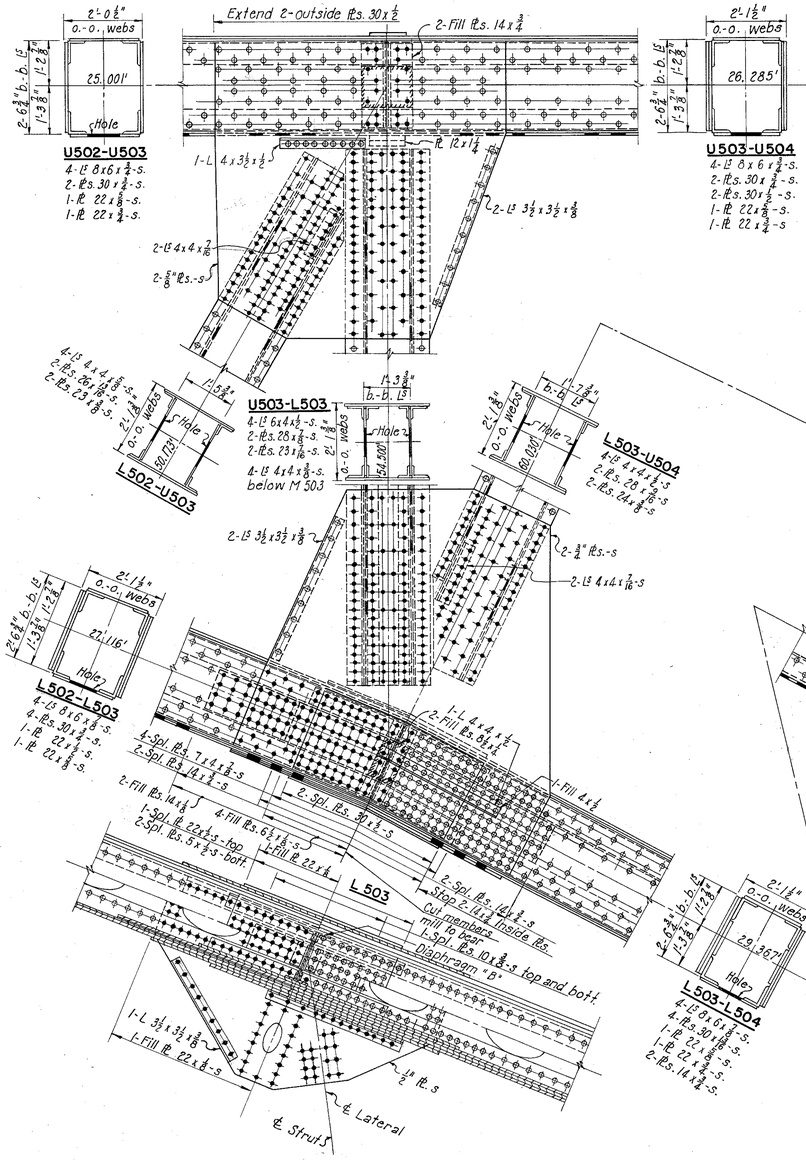


U 504



U 505





PART 3

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO. CU - 42 R-17 5

TRUSS DETAILS UNIT 5 NORTH

PANELS 503, 504 AND 505

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/8" = 1'-0"
MADE VDG DATE 7-13-54
TRCD AH DATE 1-11-54
CKD JTK & GA DATE 1-19-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.66

294

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

65
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U500

U501

U502

U500-U501
4-L⁵ 8x6x⅞-S
2-Pls. 30x⅜-S
1-Pl. 23x⅞-S
1-Pl. 23x⅜-S

U502-U502
4-L⁵ 8x6x7/16-S
2-Pls. 30x⅜-S
1-Pl. 23x7/16-S
1-Pl. 23x⅜-S

U502-U503
4-L⁵ 8x6x¾-S
2-Pls. 30x¾-S
1-Pl. 22x⅝-S
1-Pl. 22x¾-S

DIAPHRAGM "A"
4-L⁵ 8x4x½
4-L⁵ 4x4x½
1-½" Pl

DIAPHRAGM "B"
6-L⁵ 4x4x½
1-½" Pl

DIAPHRAGM "C"
2-L⁵ 8x4x½
2-L⁵ 8x6x½
4-L⁵ 6x4x½
1-½" Pl

L500

L500-L501
4-L⁵ 8x6x⅞-S
2-Pls. 30x⅜-S
1-Pl. 22x⅝-S
1-Pl. 22x½-S

L500-L501
4-L⁵ 4x4x½
4-Pls. 24x⅜-S
2-Pls. 22x7/16

L501

L501-L502
4-L⁵ 8x6x7/16-S
1-Pl. 22x⅜-S
1-Pl. 22x½-S
2-Pls. 14x⅜-S

L501-L502
4-L⁵ 4x4x½
4-Pls. 24x⅜-S
2-Pls. 23x⅜

L502

L502-L503
4-L⁵ 8x6x¾-S
2-Pls. 30x¾-S
1-Pl. 22x⅝-S
1-Pl. 22x¾-S

L502-L503
4-L⁵ 4x4x½
2-Pls. 26x⅜-S
2-Pls. 23x⅜

U502-M502-L502
4-L⁵ 4x4x½-S
4-Pls. 26x½-S
2-Pls. 23x7/16-S
4-L⁵ 4x4x⅜-S
I.S.-M502-L502

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
TRUSS DETAILS, UNIT 5 NORTH
PANELS 500, 501 AND 502
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE V.O.G. DATE 5-21-54
TRCD A.H. DATE 10-25-54
CKD. J.T.K. DATE 10-7-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.65

326

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

COMPRESSION CHORD

LINE	MEMBER	Holes Out for Tension	L500 L501	L501 L502	L502 L503	L503 L504	L504 L505	L505 L506	L506 L507	L507 L508	L508 L509	L509 L510	L510 L511	L511 L512	L512 L513	L513 L514	L514 L515	L515 L516	L516 L517	L517 L518
1	Dead Load		- 974	- 1789	- 2479	- 3028	- 3117	- 2900	- 2667	- 2392	- 2247	- 2055	- 2048	- 2205	- 2369	- 2549	- 2527	- 2065	- 1476	- 785
2	0.8 Dead Load		- 779	- 1431	- 1983	- 2422	- 2494	- 2320	- 2134	- 1914	- 1798	- 1644	- 1638	- 1764	- 1895	- 2039	- 2022	- 1652	- 1181	- 628
3	Live Load + Imp.-Tension																			
4	Reduced L L + Imp.-Tension							+ 146	+ 318	+ 473	+ 603	+ 603	+ 473	+ 318	+ 146					
5	Live Load + Imp.-Comp.																			
6	Reduced L L + Imp.-Comp.		- 221	- 383	- 507	- 594	- 610	- 644	- 667	- 690	- 739	- 728	- 658	- 619	- 598	- 567	- 563	- 484	- 366	- 209
7	Reduced L L + Imp.-Ten. xD (CF)[e]							+ 242	+ 526	+ 785	+ 1000	+ 1000	+ 785	+ 526	+ 242					
8	Reduced L L + Imp.-Comp. xD (CF)[e]		- 366	- 635	- 840	- 984	- 1011	- 1067	- 1105	- 1143	- 1224	- 1206	- 1091	- 1025	- 991	- 940	- 933	- 802	- 606	- 346
9	Ratio= $\frac{Line\ 4}{Line\ 1\ (Comp.)}$ or $\frac{Line\ 6}{Line\ 1\ (Ten.)}$																			
10	L L Sidewalk-Tension							+ 7	+ 15	+ 23	+ 30	+ 30	+ 23	+ 15	+ 7					
11	L L Sidewalk-Comp.		- 11	- 20	- 28	- 34	- 35	- 37	- 38	- 51	- 56	- 54	- 47	- 32	- 31	- 29	- 29	- 24	- 17	- 9
12	Direct Design Stress		- 1156	- 2086	- 2851	- 3440	- 3540	- 3424	- 3277	- 3108	- 3078	- 2904	- 2776	- 2821	- 2917	- 3008	- 2984	- 2478	- 1804	- 983
13	Reverse Design Stress																			
14																				
15																				
	SECTION	Holes Out for Tension																		
a	Angles	2	8x6x 7/16	8x6x 7/16	8x6x 3/4	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 3/4	8x6x 3/4	8x6x 5/8	8x6x 5/8	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 1/2	8x6x 7/16	8x6x 7/16
b	1. Web Plate	4	30x 9/16	30x 9/16	30x 3/4	30x 3/4	30x 13/16	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 5/8	30x 3/8	30x 3/8
c	Top Cover Plate	3	22x 3/8	22x 3/8	22x 3/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 3/8	22x 3/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	23x 3/8	23x 3/8
d	Bottom Cover Plate	2	22x 1/2*)	22x 1/2*)	22x 1/2**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	23x 1/2*)	23x 1/2*)
e	1. Inside Web Plate	2				14x 9/16	14x 9/16	14x 9/16	14x 3/8		14x 3/8								14x 3/8	
f	Inside Web Plate	4																		
g	2. Outside Web Plate	4		30x 9/16	30x 3/4	30x 3/4	30x 13/16	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 5/8	30x 3/8	
h	2. Inside Web Plate	2																		
25	Length	In.	315.5"	313.2"	325.4"	311.8"	369.7"	325.8"	305.2"	305.2"	300"	300"	305.2"	305.2"	325.8"	322.5"	329.0"	331.1"	312.7"	316.3"
26	Min. Radius of Gyration	In.	10.61	10.91	10.86	10.8	10.72	10.8	10.78	10.78	10.85	10.85	10.90	10.90	10.85	10.85	10.85	10.96	10.92	10.63
27	Allowable Unit Stress	Lbs./Sq.In.	19,600	19,620	19,590	19,620	19,480	19,580	19,630	19,630	19,650	19,650	19,640	19,640	19,590	19,590	19,580	19,580	19,620	19,590
28	Gross Area	Sq.In.	71.22	104.97	144.01	174.42	181.92	174.42	169.17	158.67	163.01	152.51	146.19	146.19	152.51	152.51	152.51	124.75	93.85	60.85
29	Net Area	Sq.In.	67.85	104.97	144.01	174.42	181.92	174.42	169.17	158.67	163.01	152.51	146.19	146.19	152.51	152.51	152.51	124.75	93.47	54.28
30	Actual Unit Stress	Lbs./Sq.In.	17,020	19,870 1.3% o.	19,780 1% o.	19,720 0.5% o.	19,460	19,620	19,350	19,600	18,860	19,030	19,000	19,300	19,120	19,720 0.7% o.	19,580	19,860	19,300 1.4% o.	18,100
31	Material		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

TENSION CHORD

LINE	MEMBER	U500 U501	U501 U502	U502 U503	U503 U504	U504 U505	U505 U506	U506 U507	U507 U508	U508 U509	U509 U510	U510 U511	U511 U512	U512 U513	U513 U514	U514 U515	U515 U516	U516 U517	U517 U518
1	Dead Load		+ 932	+ 1714	+ 2286	+ 2670	+ 2621	+ 2352	+ 2247	+ 2037	+ 2037	+ 2055	+ 2014	+ 2167	+ 2181	+ 1871	+ 1416	+ 753	
2	0.8 Dead Load		+ 746	+ 1371	+ 1829	+ 2136	+ 2097	+ 1882	+ 1798	+ 1630	+ 1630	+ 1644	+ 1611	+ 1734	+ 1745	+ 1497	+ 1133	+ 602	
3	Live Load + Imp.-Tension																		
4	Reduced L L + Imp.-Tension		+ 210	+ 367	+ 467	+ 590	+ 655	+ 677	+ 740	+ 728	+ 728	+ 728	+ 648	+ 608	+ 549	+ 440	+ 351	+ 200	
5	Live Load + Imp.-Comp.																		
6	Reduced L L + Imp.-Comp.					- 133	- 311	- 464	- 603	- 620	- 620	- 603	- 464	- 311	- 133				
7	Reduced L L + Imp.-Ten. xD (CF)[e]		+ 348	+ 608	+ 774	+ 978	+ 1085	+ 1122	+ 1226	+ 1206	+ 1206	+ 1206	+ 1074	+ 1008	+ 910	+ 729	+ 582	+ 332	
8	Reduced L L + Imp.-Comp. xD (CF)[e]					- 220	- 517	- 769	- 1000	- 1028	- 1028	- 1000	- 769	- 517	- 220				
9	Ratio					- 0.05	- 0.12	- 0.20	- 0.27	- 0.30	- 0.30	- 0.29	- 0.23	- 0.14	- 0.06				
10	L L Sidewalk-Tension		+ 11	+ 19	+ 26	+ 34	+ 37	+ 50	+ 56	+ 55	+ 55	+ 54	+ 46	+ 31	+ 28	+ 22	+ 16	+ 9	
11	L L Sidewalk-Comp.					- 6	- 15	- 23	- 30	- 31	- 31	- 30	- 23	- 15	- 6				
12	Direct Design Stress		+ 1105	+ 1998	+ 2629	+ 3148	+ 3219	+ 3054	+ 3080	+ 2891	+ 2891	+ 2904	+ 2731	+ 2773	+ 2683	+ 2248	+ 1731	+ 943	
13	Reverse Design Stress																		
14																			
15																			
a	Angles	8x6x 7/16	8x6x 7/16	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 1/2	8x6x 1/2	4x4x 1/2	4x4x 1/2
b	1. Web Plate	30x 3/8	30x 3/8	30x 5/8	30x 5/8	30x 5/8	30x 5/8	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 3/4	30x 3/4	30x 3/8	30x 3/8
c	Top Cover Plate	23x 5/16	23x 5/16	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 3/8	22x 3/8	23x 5/16	23x 5/16
d	Bottom Cover Plate	23x 3/8*)	23x 3/8*)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 1/2*)	22x 1/2*)	23x 3/8*)	23x 3/8*)
e	1. Inside Web Plate					14x 3/4	14x 3/4	14x 3/4	14x 3/4	14x 3/8	14x 3/8	14x 3/8		14x 3/8					
f	Inside Web Plate																		
g	2. Outside Web Plate				30x 1/2	30x 5/8	30x 5/8	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 9/16	30x 3/8			
h	2. Inside Web Plate																		
25	Length																		
26	Min. Radius of Gyration																		
27	Allowable Unit Stress	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Gross Area	57.91	57.91	100.01	130.01	158.51	158.51	151.01	151.01	140.51	140.51	140.51	130.01	140.51	130.01	108.25	85.75	49.19	49.19
29	Net Area	49.72	49.72	85.64	111.64	136.14	136.14	129.64	129.64	120.64	120.64	120.64	111.64	120.64	111.64	93.13	73.63	40.50	40.50
30	Actual Unit Stress		22,220	23,300	23,600	23,120	23,600	23,560	23,770	23,980	23,980	24,100	24,450 1.9% o.	23,000	24,050	24,180 1.8% o.	23,520	23,250	
31	Material	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

COMPRESSION WEB MEMBERS

LINE	MEMBER	U504 L505	L509 U510	L510 U511	L512 U513	L513 U514	U500 L500	U501 L501	U502 M502	M502 L502	U503 M503	M503 L503	U504 M504	M504 L504	U505 M505	M505 L505	U506 M506	M506 L506
1	Dead Load	- 256	+ 29	- 70	+ 28	- 203	- 82	- 1187	- 1264	- 1407	- 1149	- 1285	- 608	- 1097	- 228	- 362	- 549	- 690
2	0.8 Dead Load	- 205	+ 23	- 56	+ 22	- 162	- 66	- 950	- 1011	- 1126	- 919	- 1028	- 486	- 878	- 182	- 290	- 439	- 552
3	Live Load + Imp.-Tension																	
4	Reduced L L + Imp.-Tension	+ 340	+ 247	+ 290	+ 365	+ 340							+ 203	+ 162	+ 194	+ 194	+ 158	+ 158
5	Live Load + Imp.-Comp.																	
6	Reduced L L + Imp.-Comp.	- 265	- 225	- 240	- 225	- 263	- 50	- 254	- 266	- 304	- 233	- 282	- 355	- 401	- 325	- 370	- 268	- 319
7	Reduced L L + Imp.-Ten. xD (CF)[e]	+ 564	+ 410	+ 481	+ 605	+ 564							+ 336	+ 269	+ 322	+ 322	+ 262	+ 262
8	Reduced L.L. + Imp.-Comp. xD (CF)[e]	- 439	- 373	- 398	- 373	- 436	- 83	- 421	- 441	- 504	- 386	- 467	- 589	- 665	- 539	- 614	- 444	- 529
9	Ratio	- 1.33	- 7.8	- 4.15	- 8.03	- 1.67							- 0.33	- 0.15	- 0.85	- 0.54	- 0.29	- 0.23
10	L L Sidewalk-Tension	+ 16	+ 14	+ 12	+ 17	+ 16							+ 14	+ 0.14	+ 14	+ 14	+ 8	+ 8
11	L L Sidewalk-Comp.	- 20	- 14	- 14	- 17	- 19	- 1	- 13	- 14	- 16	- 12	- 14	- 19	- 21	- 16	- 18	- 2	- 15
12	Direct Design Stress	- 664	+ 447	- 468	+ 644	- 617	- 150	- 1384	- 1466	- 1646	- 1317	- 1509	- 1094	- 1564	- 737	- 922	- 895	- 1096
13	Reverse Design Stress	+ 179	- 364	+ 437	- 368	+ 308												
14																		
15																		
a	Angles	6x4x 7/16	4x4x 3/8	4x4x 3/8	4x4x 3/8	6x4x 7/16	4x4x 3/8	4x4x 5/8	4x4x 3/4	4x4x 3/4	6x4x 1/2	6x4x 1/2	7x4x 5/8	7x4x 5/8	6x4x 7/16	6x4x 7/16	4x4x 3/8	4x4x 3/8
b	1. Web Plate	28x 7/16	24x 3/8	24x 7/16	26x 3/8	28x 7/16	24x 3/8	24x 1/2	26x 1/2	26x 1/2	28x 7/8	28x 7/8	30x 3/4	30x 3/4	28x 7/16	28x 7/16	26x 5/8	26x 5/8
c	Cover Plate	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)
e	Inside Angles									4x4x 3/8		4x4x 3/8		4x4x 1/2		4x4x 3/8		4x4x 3/8
g	2. Web Plate							24x 1/2	26x 1/2	26x 1/2								
25	Length	685.3"		493.6"		686.3	342"	432.0"	522"	522"	648"	648"	816"	816"	631"	631"	504"	504"
26	Min. Radius of Gyration	8.61		7.65		8.61	7.70	7.55	7.92	7.75	8.47	8.22	9.10	8.76	8.61	8.22	7.83	7.58
27	Allowable Unit Stress	17,080	18,000	13,960	24,000	17,080	14,510	18,490	17,910	17,910	17,140	17,140	16,000	16,000	17,290	17,290	17,960	17,960
28	Gross Area	50.97	39.19	42.19	40.69	50.97	39.19	77.82	85.14	96.58	79.38	90.82	82.30	97.30	50.97	62.41	53.69	65.13
29	Net Area	43.49	32.44	35.47	33.19	43.49	31.88	77.82	85.14	96.58	79.38	90.82	82.30	97.30	43.49	62.04	49.90	64.94
30	Actual Unit Stress	15,290	13,770†	13,190	19,400†	14,200	4,700	17,810	17,210	17,030	16,590	16,600	13,300	16,080	16,970	14,860	17,920	16,880
31	Material	S	C	S	S	S	C	S	S	S	S	S	S	S	S	S	S	S

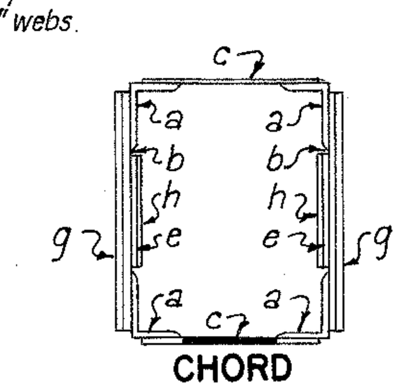
LINE	MEMBER	U507 L507	U508 L508	U509 L509	U510 L510	U511 L511	U512 M512	M512 L512	U513 M513	M513 L513	U514 M514	M514 L514	U515 M515	M515 L515	U516 M516	M516 L516	U517 L517	U518 L518
1	Dead Load	- 279	- 406	- 126	- 154	- 87	- 372	- 513	- 166	- 300	- 514	- 906	- 904	- 1038	- 1038	- 1180	- 924	- 82
2	0.8 Dead Load	- 223	- 325	- 101	- 123	- 70	- 298	- 410	- 133	- 240	- 411	- 725	- 723	- 830	- 830	- 944	- 739	- 66
3	Live Load + Imp.-Tension																	
4	Reduced L L + Imp.-Tension	+ 176	151		+ 158	+ 190	+ 170	+ 170	+ 195	+ 195	+ 210	+ 180						
5	Live Load + Imp.-Comp.																	
6	Reduced L L + Imp.-Comp.	- 241	- 199	- 48	- 197	- 241	- 268	- 319	- 325	- 370	- 352	- 396	- 208	- 260	- 248	- 296	- 231	- 50
7	Reduced L L + Imp.-Ten. xD (CF)[e]	+ 292	+ 250		+ 262	+ 315	+ 282	+ 282	+ 324	+ 324	+ 348	+ 298						
8	Reduced L.L. + Imp.-Comp. xD (CF)[e]	- 400	- 330	- 80	- 327	- 400	- 444	- 529	- 539	- 614	- 584	- 656	- 345	- 431	- 411	- 491	- 383	- 83
9	Ratio	- 0.63	- 0.37		- 1.03	- 2.18	- 0.46	- 0.33	- 1.17	- 0.65	- 0.41	- 0.20						
10	L L Sidewalk-Tension	+ 9	+ 9		+ 10	+ 11	+ 10	+ 10	+ 15	+ 15	+ 15	+ 15						
11	L L Sidewalk-Comp.	- 11	- 13	- 1	- 12	- 11	- 12	- 15	- 16	- 18	- 19	- 21	- 10	- 12	- 12	- 14	- 11	- 1
12	Direct Design Stress	- 634	- 668	- 182	- 462	- 481	- 754	- 954	- 688	- 872	- 1014	- 1402	- 1078	- 1273	- 1253	- 1449	- 1133	- 150
13	Reverse Design Stress				+ 17	+ 256			+ 67									
14																		
15																		
a	Angles	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	6x4x 7/16	6x4x 7/16	7x4x 5/8	7x4x 5/8	6x4x 1/2	6x4x 1/2	4x4x 5/8	4x4x 5/8	4x4x 5/8	4x4x 3/8
b	1. Web Plate	24x 7/16	24x 7/16	24x 3/8	24x 3/8	24x 7/16	26x 1/2	26x 1/2	28x 7/16	28x 7/16	30x 5/8	30x 5/8	28x 5/8	28x 5/8	26x 3/4	26x 3/4	24x 11/16	24x 3/8
c	Cover Plate	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	24x 3/8**)	24x 3/8**)	23x 3/8**)	23x 3/8**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 3/8**)
e	Inside Angles							4x4x 3/8		4x4x 3/8		4x4x 3/8		4x4x 3/8		4x4x 3/8		
g	2. Web Plate																	
25	Length	448"	392"	392"	392"	448"	504"	504"	631"	631"	816"	816"	636"	636"	496"	496"	408"	320"
26	Min. Radius of Gyration	7.65	7.65	7.70	7.70	7.65	7.86	7.58	8.61	8.22	9.13	8.80	8.54	8.25	7.93	7.71	7.69	7.70
27	Allowable Unit Stress	18,420	18,790	14,350	14,350	14,140	17,960	17,960	17,290	17,290	16,050	16,050	17,270	17,270	18,090	18,090	18,710	14,570
28	Gross Area	42.19	42.19	39.19	39.19	42.19	47.94	59.38	50.97	62.41	74.80	86.24	65.38	76.82	68.82	80.26	62.82	39.19
29	Net Area	34.71	34.71	31.88	31.88	35.47	41.27	59.38	43.49	62.04	71.20	86.24	61.78	76.82	68.82	80.26	61.27	31.88
30	Actual Unit Stress	18,250	19,250 2.45% o.	5,700	14,490 1.0% o.	13,540	18,260 1.7% o.	16,060	15,820	14,050	14,230	16,260 1.3% o.	17,430 0.9% o.	16,580	18,220 0.7% o.	18,030	18,500	4,700
31	Material	S	S	C	C	C	S	S	S	S	S	S	S	S	S	S	S	C

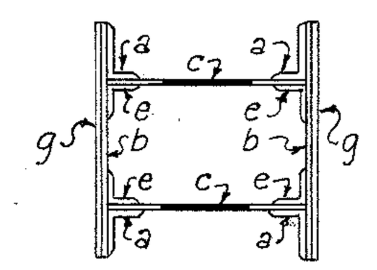
TENSION WEB MEMBERS

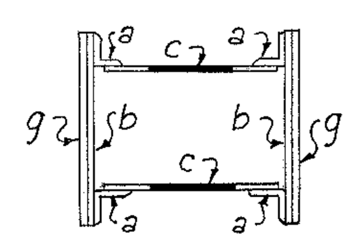
LINE	MEMBER	Holes Out for Tension	L500 U501	L501 U502	L502 U503	L503 U504	U505 L506	U506 L507	U507 L508	U508 L509	L511 U512	U514 L515	U515 L516	U516 L517	U517 L518
1	Dead Load		+ 1420	+ 1405	+ 1148	+ 739	+ 95	+ 485	+ 170	+ 345	+ 276	+ 590	+ 880	+ 1118	+ 1107
2	0.8 Dead Load		+ 1136	+ 1124	+ 918	+ 591	+ 76	+ 388	+ 136	+ 276	+ 221	+ 472	+ 704	+ 894	+ 886
3	Live Load + Imp.-Tension														
4	Reduced L L + Imp.-Tension		+ 323	+ 306	+ 250	+ 184	+ 365	+ 312	+ 290	+ 253	+ 312	+ 173	+ 222	+ 288	+ 294
5	Live Load + Imp.-Comp.														
6	Reduced L L + Imp.-Comp.						- 223	- 191	- 225	- 213	- 202				
7	Reduced L L + Imp.-Ten. xD (CF)[e]		+ 535	+ 507	+ 414	+ 305	+ 605	+ 517	+ 481	+ 420	+ 517	+ 287	+ 368	+ 477	+ 487
8	Reduced L.L. + Imp.-Comp. xD (CF)[e]						- 370	- 316	- 373	- 353	- 334				
9	Ratio= $\frac{Line\ 4}{Line\ 1\ (Comp.)}$ or $\frac{Line\ 6}{Line\ 1\ (Ten.)}$						- 2.35	- 0.39	- 1.32	- 0.62	- 0.73				
10	L L Sidewalk-Tension		+ 16	+ 16	+ 13	+ 6	+ 17	+ 14	+ 12	+ 16	+ 14	+ 6	+ 10	+ 13	+ 13
11	L L Sidewalk-Comp.						- 16	- 10	- 11	- 12	- 12				
12	Direct Design Stress		+ 1687	+ 1647	+ 1345	+ 902	+ 698	+ 919	+ 629	+ 712	+ 752	+ 765	+ 1082	+ 1384	+ 1386
13	Reverse Design Stress						- 310		- 117						
14															
15															
	SECTION	Holes Out for Tension													
a	Angles	2	4x4x 1/2	4x4x 5/8	4x4x 5/8	4x4x 1/2	4x4x 3/8	4x4x 1/2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 1/2	4x4x 3/4	4x4x 3/4
b	1. Web Plate	⊗	24x 5/8	24x 9/16	26x 3/4	28x 1/2	26x 3/8	24x 1/2	24x 7/16	24x 3/8	24x 3/8	28x 3/8	26x 5/8	24x 3/4	24x 3/4
c	Cover Plate	2	22x 7/16**)	23x 3/8**)	23x 3/8**)	24x 3/8**)	23x 3/8**)	24x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 7/16**)	23x 7/16**)
e	Inside Angles	2													
g	2. Web Plate	3	24x 5/8	24x 9/16											
25	LENGTH	In.													
26	Min. Radius of Gyration	In.													
27	Allowable Unit Stress	Lbs./Sq.In.	24,000	24,000	24,000	24,000	24,000	24,000	18,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Gross Area	Sq.In.	85.50	82.19	67.19	53.50	40.69	49.50	42.19	39.19	39.19	42.19	57.25	69.14	69.14
29	Net Area	Sq.In.	72.25	68.94	54.69	44.00	33.19	40.00	35.07	32.44	32.44	34.69	46.75	56.89	56.89
30	Actual Unit Stress	Lbs./Sq.In.	23,340	23,890	24,580	20,500	21,030	22,980	17,920	21,950	23,180	22,020	23,120	24,330 1.4% o.	24,330 1.4% o.
31	Material		S	S	S	S	S	S	C	S	S	S	S	S	S

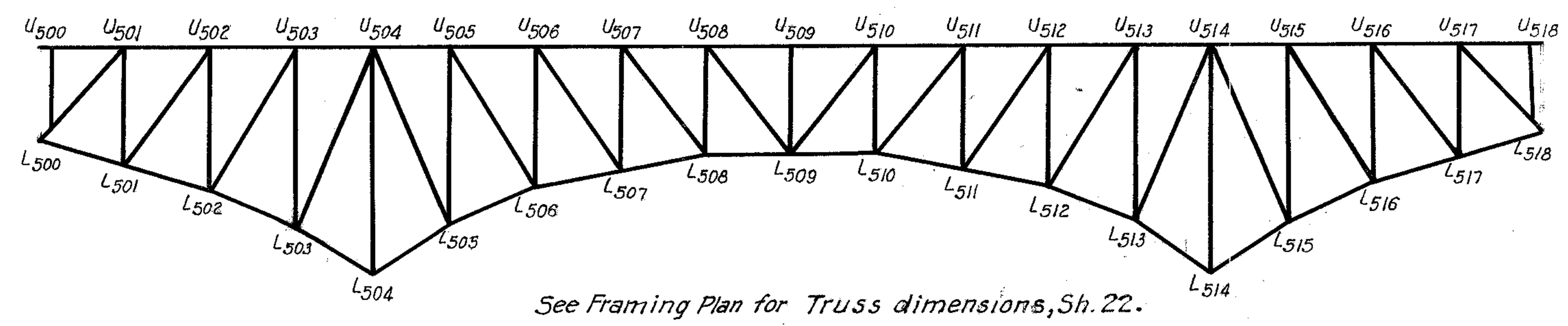
NOTE:
*) Handhole 11" Wide
**) Handhole 10" Wide
S= Special Steel
C= Carbon Steel
⊗ = 3 Holes out of 24" webs & 4 Holes out of 26" & 28" webs.

All dead load and live load stresses are in kips.
Line 29,- Net area for tension or effective gross area for compression.


CHORD


WEB MEMBER


WEB MEMBER



See Framing Plan for Truss dimensions, Sh. 22.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17.5

STRESS SHEET UNIT 5
SOUTH TRUSS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE H.W.L. DATE 5-7-54
TRCD. G.J.K. / H.C.L. DATE 8-26-54
CKD. D.F.R. DATE 9-27-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-IA SHEET 2.64

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	
2	OHIO			63 / 122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

COMPRESSION CHORD

LINE	MEMBER	Holes Out for Tension	L500 L501	L501 L502	L502 L503	L503 L504	L504 L505	L505 L506	L506 L507	L507 L508	L508 L509
1	Dead Load		- 1043	- 1907	- 2629	- 3229	- 3302	- 3162	- 2965	- 2711	- 2585
2	0.8 Dead Load		- 834	- 1526	- 2103	- 2583	- 2642	- 2530	- 2372	- 2169	- 2068
3	Live Load + Imp.-Tension										
4	Reduced L L + Imp.-Tension							+ 161	+ 325	+ 473	+ 599
5	Live Load + Imp.-Comp.										
6	Reduced L L + Imp.-Comp.		- 240	- 414	- 544	- 637	- 652	- 707	- 736	- 756	- 806
7	Reduced L L + Imp.-Ten. x D (CF)[e]							+ 267	+ 539	+ 785	+ 993
8	Reduced L L + Imp.-Comp. xD (CF)		- 398	- 686	- 902	- 1056	- 1081	- 1172	- 1220	- 1253	-1336
9	Ratio= Line 4 / Line 1 (Comp.) or Line 6 / Line 1 (Ten.)							- 0.05	- 0.11	- 0.17	-0.23
10	L L Sidewalk-Tension							+ 8	+ 17	+ 25	+ 32
11	L L Sidewalk-Comp.		- 11	- 20	- 28	- 34	- 35	- 42	- 48	- 53	- 59
12	Direct Design Stress		- 1243	- 2232	- 3033	- 3673	- 3758	- 3744	- 3640	- 3475	- 3463
13	Reverse Design Stress										
14											
15											
	SECTION										
a	Angles	2	8x6x 7/16	8x6x 7/16	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8
b	1. Web Plate	4	30x 9/16	30x 9/16	30x 3/4	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16
c	Cover Plate	2	22x 3/8	22x 3/8	22x 1/2	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8
d	Bottom Plate	2	22x 1/2*)	22x 1/2*)	22x 5/8**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)
e	1. Inside Web Plate	2		14x 3/8		14x 3/4	14x 7/8	14x 7/8	14x 3/4	14x 3/8	14x 3/8
f	Inside Web Plate	4									
g	2. Outside Web Plate	4		30x 9/16	30x 3/4	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16
h	2. Inside Web Plate	2									
25	Length	In.	315.8"	313.3"	325.4"	353.4"	369.8"	325.77"	305.20"	305.20"	300.0"
26	Radius of Gyration	In.	10.61	10.48	10.90	10.60	10.51	10.51	10.60	10.80	10.80
27	Allowable Unit Stress	Lbs./Sq.In.	19,590	19,590	19,590	19,490	19,430	19,560	19,620	19,630	19,650
28	Gross Area	Sq.In.	71.22	115.47	154.42	187.17	190.67	190.67	187.17	176.67	176.67
29	Net Area	Sq.In.	67.85	115.47	154.42	187.17	190.67	190.67	187.17	176.67	176.67
30	Actual Unit Stress	Lbs./Sq.In.	18,320	19,330	19,620	19,600 (0.6% o.)	19,700 (1.4% o.)	19,640	19,450	19,650	19,600
31	Material		S	S	S	S	S	S	S	S	S

LINE	MEMBER	L509 L510	L510 L511	L511 L512	L512 L513	L513 L514	L514 L515	L515 L516	L516 L517	L517 L518
1	Dead Load	- 2348	- 2286	- 2392	- 2501	- 2604	- 2586	- 2104	- 1510	- 806
2	0.8 Dead Load	- 1878	- 1829	- 1914	- 2001	- 2083	- 2069	- 1683	- 1208	- 645
3	Live Load + Imp.-Tension									
4	Reduced L L + Imp.-Tension	+ 599	+ 473	+ 325	+ 161					
5	Live Load + Imp.-Comp.									
6	Reduced L L + Imp.-Comp.	- 788	- 706	- 652	- 624	- 576	- 571	- 494	- 377	- 214
7	Reduced L L + Imp.-Ten. x D (CF)[e]	+ 993	+ 785	+ 539	+ 267					
8	Reduced L L + Imp.-Comp. xD (CF)	- 1306	- 1171	- 1081	- 1034	- 955	- 947	- 818	- 625	- 355
9	Ratio	- 0.26	- 0.21	- 0.14	- 0.06					
10	L L Sidewalk-Tension	+ 32	+ 25	+ 17	+ 8					
11	L L Sidewalk-Comp.	- 57	- 50	- 43	- 36	- 29	- 29	- 24	- 17	- 9
12	Direct Design Stress	- 3241	- 3050	- 3038	- 3071	-3067	- 3045	- 2525	- 1850	- 1009
13	Reverse Design Stress									
a	Angles	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 5/8	8x6x 7/16	8x6x 7/16
b	1. Web Plate	30x 13/16	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 5/8	30x 3/8	30x 3/8
c	Cover Plate	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 3/8	23x 3/8	23x 3/8
d	Bottom Plate	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	23x 1/2*)	23x 1/2*)
e	1. Inside Web Plate								14x 7/16	
f	Inside Web Plate									
g	2. Outside Web Plate	30x 13/16	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 5/8	30x 3/8	
h	2. Inside Web Plate									
25	Length	300.0"	305.2"	305.2"	325.8"	358.1"	365.2"	331.1"	318.0"	316.3"
26	Radius of Gyration	10.80	10.80	10.80	10.80	10.80	10.80	10.90	10.84	10.63
27	Allowable Unit Stress	19,650	19,630	19,630	19,580	19,490	19,470	19,570	19,600	19,590
28	Gross Area	166.17	158.67	158.67	158.67	158.67	158.67	131.19	95.60	60.85
29	Net Area	166.17	158.67	158.67	158.67	158.67	158.67	131.19	95.22	54.28
30	Actual Unit Stress	19,500	19,220	19,150	19,350	19,340	19,200	19,220	19,370	18,590
31	Material	S	S	S	S	S	S	S	S	S

TENSION CHORD

LINE	MEMBER	U500 U501	U501 U502	U502 U503	U503 U504	U504 U505	U505 U506	U506 U507	U507 U508	U508 U509
1	Dead Load		+ 999	+ 1827	+ 2424	+ 2911	+ 2914	+ 2665	+ 2585	+ 2353
2	0.8 Dead Load		+ 799	+ 1462	+ 1939	+ 2329	+ 2331	+ 2132	+ 2068	+ 1882
4	Reduced L L + Imp.-Tension		+ 229	+ 397	+ 503	+ 650	+ 723	+ 743	+ 807	+ 791
6	Reduced L L + Imp.-Comp.					- 149	- 319	- 466	- 599	- 613
7	Reduced L L + Imp.-Ten. x D (CF)[e]		+ 380	+ 658	+ 833	+ 1077	+ 1198	+ 1231	+ 1337	+ 1311
8	Reduced L L + Imp.-Comp. xD (CF)					- 247	- 529	- 772	- 993	- 1016
9	Ratio					- 0.05	- 0.11	- 0.17	- 0.23	- 0.26
10	L L Sidewalk-Tension		+ 11	+ 19	+ 26	+ 38	+ 47	+ 52	+ 59	+ 58
11	L L Sidewalk-Comp.					- 8	- 17	- 24	- 32	- 33
12	Direct Design Stress		+ 1190	+ 2139	+ 2798	+ 3444	+ 3576	+ 3415	+ 3464	+ 3251
a	Angles	8x6x 7/16	8x6x 7/16	8x6x 3/4	8x6x 3/4	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 3/4
b	1. Web Plate	30x 3/8	30x 3/8	30x 3/4	30x 3/4	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 5/8
c	Cover Plate	23x 5/16	23x 5/16	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8
d	Bottom Plate	23x 3/8*)	23x 3/8*)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)
e	1. Inside Web Plate						14x 3/8			14x 3/4
g	2. Outside Web Plate				30x 1/2	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 5/8
27	Allowable Unit Stress	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Gross Area	57.91	57.91	107.51	137.51	166.17	176.67	166.17	166.17	158.51
29	Net Area	49.72	49.72	92.14	118.14	142.80	151.80	142.80	142.80	136.14
30	Actual Unit Stress		23,930	23,200	23,600	24,100 (0.4% o.)	23,550	23,920	24,250 (1% o.)	23,880
31	Material	S	S	S	S	S	S	S	S	S

LINE	MEMBER	U509 U510	U510 U511	U511 U512	U512 U513	U513 U514	U514 U515	U515 U516	U516 U517	U517 U518
1	Dead Load	+ 2353	+ 2348	+ 2248	+ 2350	+ 2302	+ 1907	+ 1449	+ 773	
2	0.8 Dead Load	+ 1882	+ 1878	+ 1798	+ 1880	+ 1842	+ 1526	+ 1159	+ 618	
4	Reduced L L + Imp.-Tension	+ 791	+ 788	+ 693	+ 641	+ 577	+ 448	+ 360	+ 205	
6	Reduced L L + Imp.-Comp.	- 613	- 599	- 466	- 319	- 149				
7	Reduced L L + Imp.-Ten. x D (CF)[e]	+ 1311	+ 1306	+ 1148	+ 1062	+ 957	+ 742	+ 597	+ 340	
8	Reduced L L + Imp.-Comp. xD (CF)	- 1016	- 993	- 772	- 529	- 247				
9	Ratio	- 0.26	- 0.25	- 0.207	- 0.136	- 0.06				
10	L L Sidewalk-Tension	+ 58	+ 57	+ 49	+ 42	+ 33	+ 21	+ 16	+ 8	
11	L L Sidewalk-Comp.	- 33	- 32	- 24	- 17	- 8				
12	Direct Design Stress	+ 3251	+ 3241	+ 2995	+ 2984	+ 2832	+ 2289	+ 1772	+ 966	
a	Angles	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 3/4	8x6x 5/8	8x6x 5/8	4x4x 1/2	4x4x 1/2
b	1. Web Plate	30x 5/8	30x 5/8	30x 5/8	30x 5/8	30x 5/8	30x 11/16	30x 11/16	30x 3/8	30x 3/8
c	Cover Plate	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 5/8	22x 3/8	22x 3/8	23x 5/16	23x 5/16
d	Bottom Plate	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 1/2*)	22x 1/2*)	23x 3/8*)	23x 3/8*)
e	1. Inside Web Plate	14x 3/4	14x 3/4	14x 3/8	14x 3/8					
g	2. Outside Web Plate	30x 5/8	30x 5/8	30x 5/8	30x 5/8	30x 5/8	30x 7/16			
27	Allowable Unit Stress	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Gross Area	158.51	158.51	148.01	148.01	137.51	114.69	88.44	49.19	49.19
29	Net Area	136.14	136.14	127.14	127.14	118.14	98.57	75.82	40.50	40.50
30	Actual Unit Stress	23,880	23,800	23,600	23,450	23,950	23,200	23,400	23,850	
31	Material	S	S	S	S	S	S	S	S	S

COMPRESSION WEB MEMBERS

LINE	U504 L505	L509 U510	L510 U511	L512 U513	L513 U514	U500 L500	U501 L501	U502 M502	M502 L502	U503 M503	M503 L503	U504 M504	M504 L504
1	- 148	- 9	- 167	- 94	- 133	- 88	- 1269	- 1330	- 1473	- 1189	- 1335	- 896	- 698
2	- 118	- 7	- 134	- 75	- 106	- 70	- 1015	- 1064	- 1178	- 951	- 1068	- 717	- 558
4	+ 332	+ 245	+ 279	+ 355	+ 332							+ 170	+ 213
6	- 252	- 228	- 264	- 248	- 252	- 52	- 271	- 276	- 317	- 237	- 278	- 347	- 378
7	+ 550	+ 406	+ 462	+ 589	+ 550							+ 282	+ 353
8	- 418	- 378	- 438	- 411	- 417	- 86	- 450	- 458	- 526	- 393	- 461	- 575	- 626
9	- 2.24	- 27.2	- 1.67	- 3.78	- 2.50							- 0.19	- 0.31
10	+ 17	+ 14	+ 12	+ 17	+ 17							+ 11	+ 11
11	- 18	- 14	- 14	- 18	- 18	- 1	- 13	- 14	- 16	- 12	- 15	- 20	- 22
12	- 554	- 399	- 586	- 504	- 541	- 157	- 1478	- 1536	- 1720	- 1356	- 1544	- 1312	- 1206
13	+ 449	+ 411	+ 262	+ 531	+ 461								
a	6x4x 7/16	4x4x 3/8	4x4x 3/8	4x4x 3/8	6x4x 7/16	4x4x 3/8	4x4x 3/4	4x4x 3/4	4x4x 3/4	6x4x 1/2	6x4x 1/2	7x4x 5/8	7x4x 5/8
b	28x 7/16	24x 3/8	24x 7/16	26x 3/8	28x 7/16	24x 3/8	24x 1/2	26x 1/2	26x 1/2	28x 7/8	28x 7/8	30x 3/4	30x 3/4
c	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x7/16**)	23x7/16**)	23x7/16**)	23x7/16**)	23x7/16**)	23x7/16**)	23x7/16**)
e									4x4x 3/8		4x4x 3/8		
g							24x 1/2	26x 1/2	26x 1/2				
25	705.1"	493.6"	493.6"	586.5"	705.1"	342"	432.0"	522"	522"	648"	648"	816"	816"
26	8.61	7.70	7.65	7.93	8.61	7.70	7.63	7.92	7.75	8.47	8.22	9.10	9.10
27	13,320	13,975	18,090	17,480	13,320	14,560	18,520	17,910	17,910	17,140	17,140	16,300	16,300
28	50.97	39.19	42.19	40.69	50.97	39.19	81.14	85.14	96.58	79.38	90.82	82.30	82.30
29	44.67	31.88	34.71	32.82	44.67	31.88	81.14	85.14	96.58	79.38	90.82	82.30	82.30
30	12,390	12,500	16,900	15,330	12,090	4,920	18,200	18,020 (0.6% o.)	17,940	17,090	17,000	15,940	14,650
31	C	C	S	S	C	C	S	S	S	S	S	S	S

LINE	U505 M505	M505 L505	U506 M506	U506 L506	U507 L507	U508 L508	U509 L509	U510 L510	U511 L511	U512 M512	M512 L512
1	- 132	- 277	- 507	- 649	- 241	- 430	- 123	- 118	- 1	- 284	- 426
2	- 106	- 222	- 406	- 519	- 193	- 344	- 98	- 94	- 1	- 227	- 341
4	+ 207	+ 207	+ 164	+ 164	+ 185	+ 153		+ 165	+ 209	+ 184	+ 184
6	- 319	- 362	- 260	- 306	- 237	- 204	- 45	- 195	- 237	- 260	- 306
7	+ 343	+ 343	+ 272	+ 272	+ 307	+ 254		+ 274	+ 346	+ 305	+ 305
8	- 529	- 600	- 431	- 507	- 393	- 338	- 75	- 323	- 393	- 431	- 507
9	- 1.57	- 0.75	- 0.32	- 0.25	- 0.17	- 0.36		- 1.40	- 209	- 0.65	- 0.43
10	+ 15	+ 15	+ 8	+ 8	+ 9	+ 9		+ 10	+ 11	+ 10	+ 10
11	- 16	- 19	- 13	- 15	- 11	- 13	- 1	- 12	- 11	- 13	- 15
12	- 651	- 841	- 850	- 1041	- 597	- 695	- 174	- 429	- 405	- 671	- 863
13	+ 176							+ 104	+ 355		
a	6x4x 1/2	6x4x 1/2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8
b	28x 7/16	28x 7/16	26x 5/8	26x 5/8	24x 7/16	24x 1/2	24x 3/8	24x 3/8	24x 3/8	26x 7/16	26x 7/16
c	23x7/16**)	23x7/16**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	24x 3/8**)	24x 3/8**)
e		4x4x 3/8		4x4x 3/8							4x4x 3/8
25	631"	631"	504"	504"	448"	392"	392"	392"	448"	504"	504"
26	8.63	8.26	7.83	7.58	7.65	7.60	7.70	7.70	7.70	7.89	7.59
27	13,530	13,540	17,960	17,960	18,420	18,780	14,350	14,350	14,160	17,970	17,970
28	54.88	66.32	53.69	65.13	42.19	45.19	39.19	39.19	39.19	44.69	56.13
29	48.18	66.32	49.90	64.94	34.71	38.52	31.88	31.88	31.88	37.22	55.76
30	13,500	12,690	17,020	16,030	17,200	18,040	5,450	13,450	12,700	18,010	15,490
31	C	C	S	S	S	S	C	C	C	S	S

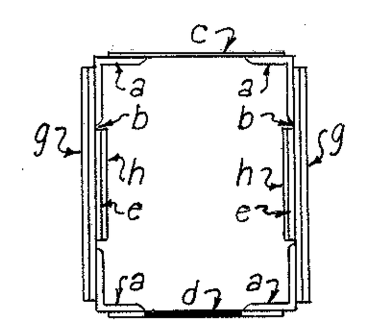
LINE	U513 M513	M513 L513	U514 M514	M514 L514	U515 M515	M515 L515	U516 M516	M516 L516	U517 L517	U518 L518
1	- 52	- 197	- 715	- 615	- 900	- 1046	- 1049	- 1192	- 948	- 85
2	- 42	- 158	- 572	- 492	- 720	- 837	- 839	- 954	- 758	- 68
4	+ 212	+ 212	+ 184	+ 218						
6	- 319	- 363	- 344	- 377	- 204	- 254	- 247	- 293	- 236	- 52
7	+ 352	+ 352	+ 305	+ 362						
8	- 529	- 601	- 570	- 625	- 338	- 421	- 410	- 486	- 391	- 86
9	- 4.08	- 1.08	- 0.26	- 0.42						
10	+ 15	+ 15	+ 12	+ 12						
11	- 16	- 19	- 20	- 22	- 10	- 12	- 12	- 14	- 11	- 1
12	- 587	- 778	- 1162	- 1139	- 1068	- 1270	- 1261	- 1454	- 1160	- 155
13	+ 325	+ 41								
a	6x4x 7/16	6x4x 7/16	7x4x 5/8	7x4x 5/8	6x4x 1/2	6x4x 1/2	4x4x 3/4	4x4x 3/4	4x4x 5/8	4x4x 3/8
b	28x 7/16	28x 7/16	30x 5/8	30x 5/8	28x 5/8	28x 5/8	26x 3/4	26x 3/4	24x 3/4	24x 3/8
c	23x 3/8**)	23x 3/8**)	23x7/16**)	23x7/16**)	23x7/16**)	23x7/16**)	23x7/16**)	23x7/16**)	23x 3/8**)	23x 3/8**)
e		4x4x 3/8				4x4x 3/8		4x4x 3/8		
25	631"	631"	816"	816"	636"	636"	496"	496"	408"	320"
26	8.61	8.21	9.13	9.13	8.54	8.25	7.99	7.77	7.67	7.70
27	13,520	13,520	16,330	16,330	17,270	17,270	18,120	18,120	18,700	14,560
28	50.97	62.41	74.80	74.80	65.38	76.82	72.14	83.58	64.19	39.19
29	44.67	62.04	71.20	71.20	61.78	76.82	72.14	83.58	64.19	31.88
30	13,120	12,520	16,320	16,000	17,290	16,520	17,500	17,400	18,070	4,860
31	C	C	S	S	S	S	S	S	S	C

TENSION WEB MEMBERS

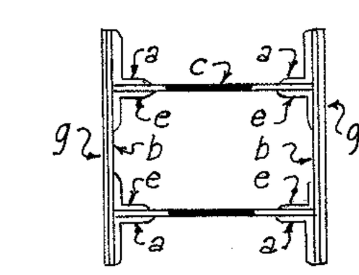
LINE	MEMBER	Holes Out for Tension	L500 U501	L501 U502	L502 U503	L503 U504	U505 L506	U506 L507	U507 L508	U508 L509	L511 U512	U514 L515	U515 L516	U517 L517	U518 L518
1	Dead Load		+ 1521	+ 1491	+ 1198	+ 967	+ 6	+ 477	+ 130	+ 381	+ 185	+ 762	+ 885	+ 1140	+ 1137
2	0.8 Dead Load		+ 1217	+ 1193	+ 958	+ 774	+ 5	+ 358	+ 104	+ 305	+ 148	+ 610	+ 708	+ 912	+ 910
3	Live Load + Imp.-Tension														
4	Reduced L L + Imp-Tension		+ 347	+ 319	+ 258	+ 208	+ 355	+ 300	+ 279	+ 256	+ 300	+ 186	+ 219	+ 289	+ 300
5	Live Load + Imp.-Comp.														
6	Reduced L L + Imp.-Comp.						- 241	- 197	- 232	- 213	- 222				
7	Reduced L L + Imp.-Ten. xD(CF)[e]		+ 575	+ 529	+ 427	+ 345	+ 588	+ 497	+ 462	+ 425	+ 497	+ 308	+ 363	+ 479	+ 497
8	Reduced L L + Imp.-Comp. xD (CF)[e]						- 400	- 327	- 385	- 353	- 368				
9	Ratio= Line 4 / Line 1 (Comp.) or Line 6 / Line 1 (Ten.)						- 59.1	- 0.44	- 1.78	- 0.56	- 1.20				
10	L L Sidewalk - Tension		+ 16	+ 16	+ 13	+ 10	+ 17	+ 14	+ 12	+ 16	+ 14	+ 8	+ 10	+ 13	+ 13
11	L L Sidewalk - Comp.						- 17	- 10	- 12	- 12	- 12				
12	Direct Design Stress		+ 1808	+ 1738	+ 1398	+ 1129	+ 422	+ 869	+ 578	+ 746	+ 659	+ 926	+ 1081	+ 1404	+ 1420
13	Reverse Design Stress						+ 600		- 250		- 68				
14															
15															
	SECTION														
a	Outer Angles	2	4x4x 5/8	4x4x 5/8	4x4x 5/8	4x4x 1/2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 1/2	4x4x 3/4	4x4x 3/4
b	1. Web Plate	⊕	24x 5/8	24x 5/8	26x 13/16	28x 9/16	26x 3/8	24x 1/2	24x 3/8	24x 3/8	24x 1/2	28x 1/2	26x 5/8	24x 13/16	24x 13/16
c	Cover Plate	2	22x7/16**)	22x 3/8**)	23x 3/8**)	24x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x 3/8**)	23x7/16**)	23x7/16**)
e	Inner Angles														
g	2. Web Plate	3	24x 5/8	24x 5/8											
25	Length	In.													
26	Min. Radius of Gyration	In.													
27	Allowable Unit Stress	Lbs./Sq.In.	24,000	24,000	24,000	24,000	18,000	24,000	18,000	24,000	18,000	24,000	24,000	24,000	24,000
28	Gross Area	Sq.In.	88.94	87.44	70.44	57.00	40.69	45.19	39.19	39.19	45.19	49.19	57.25	72.14	72.14
29	Net Area	Sq.In.	74.69	73.44	57.44	47.00	33.19	37.69	32.44	32.44	37.69	40.69	46.75	59.52	59.52
30	Actual Unit Stress	Lbs./Sq.In.	24,200 (0.8% o.)	23,650	24,340	24,020	18,100 (0.5% o.)	23,050	17,820	23,000	17,500	22,760	23,150	23,580	23,850
31	Material		S	S	S	S	C	S	C	S	C	S	S	S	S

NOTE
*) Handhole 11" Wide
**) Handhole 10" Wide
S= Special Steel
C= Carbon Steel
⊕ 3 Holes Out of 24" Webs
4 Holes out of 26" and 28" Webs

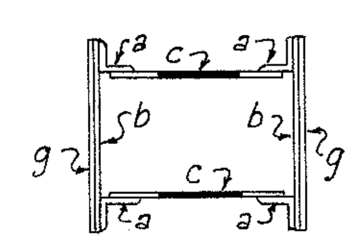
All dead load and live load stresses are in kips
Line 29,- Net area for tension or effective gross area for compression.



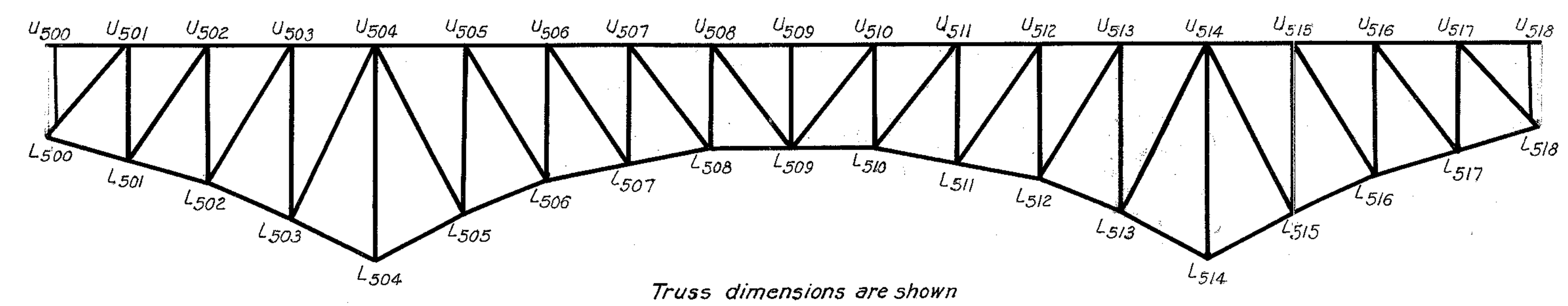
CHORD



WEB MEMBER



WEB MEMBER



Truss dimensions are shown on Framing Plan, Sh. 22

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5

STRESS SHEET UNIT 5
NORTH TRUSS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE H.W.L. / G.J.K. DATE 5-6-54
TRCD. E.M.L. DATE 8-26-54
CKD. D.L.C. DATE 8-27-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.63

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

62
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U42

U41

U40

U42-U43
1 Pl. 22x⅜-s
4 Lb 8x6x⅞-s
4 Pls. 30x⅜-s
2 Pls. 14x⅜-s
1 Pl. 22x⅜-s

U41-U42
1 Pl. 22x⅜-s
4 Lb 8x6x⅞-s
4 Pls. 30x⅞-s
2 Pls. 14x⅜-s
1 Pl. 22x⅜-s

U40-U41
1 Pl. 22x⅜-s
4 Lb 8x6x⅞-s
2 Pls. 30x⅞-s
1 Pl. 22x⅜-s

L42-L43
1 Pl. 22x⅜-s
4 Lb 8x6x⅞-s
4 Pls. 30x⅜-s
2 Pls. 14x⅜-s
1 Pl. 22x⅜-s

L42-U42
2 Pls. 24x⅜-s
4 Lb 4x4x½-s
2 Pls. 23x⅜-s

U41-L42
4 Pls. 24x⅜-s
4 Lb 4x4x½-s
2 Pls. 22x⅜-s

L41-U41
2 Pls. 24x⅜-s
4 Lb 4x4x½-s
2 Pls. 23x⅜-s

U40-L41
4 Pls. 24x⅜-s
4 Lb 4x4x½-s
2 Pls. 22x⅜-s

U40-L40
4 Pls. 24x⅞-s
4 Lb 4x4x⅝-s
2 Pls. 23x⅝-s

L42-L43
1 Pl. 22x⅜-s
4 Lb 8x6x⅞-s
4 Pls. 30x⅜-s
2 Pls. 14x⅜-s
1 Pl. 22x⅜-s

L41-L42
1 Pl. 22x⅜-s
4 Lb 8x6x⅞-s
2 Pls. 30x⅜-s
1 Pl. 22x⅜-s

L40-L41
1 Pl. 23x⅞
4 Lb 4x4x½
2 Pls. 30x⅜
1 Pl. 23x⅜

DIAPHRAGM "C"
2 Lb 4x4x⅜
1 Pl. 24x⅞

DIAPHRAGM "D"
2 Lb 4x4x⅜
1 Pl. 25x⅞
2 Lb 4x4x⅜

L42

L41

L40

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-175

TRUSS DETAILS UNIT 4 - SOUTH
PANELS 40, 41, & 42

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"-1'-0" MADE DLC DATE 5-8-84 TRCD. DATE CKD. FHD DATE 5-29-84

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

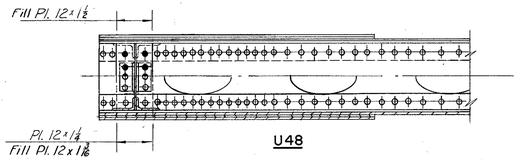
914-1A SHEET- 2.62

Note: For Link and pin details and details of slotted Pl. see sheet 45
See sheet 61 for diaphragms "A", "B" and "E"

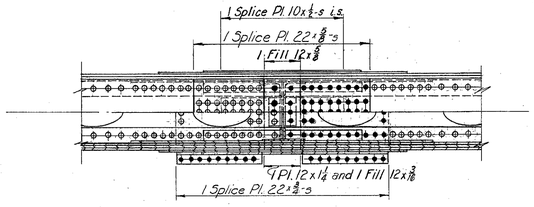
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

61
122

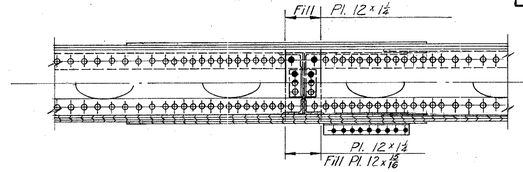
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



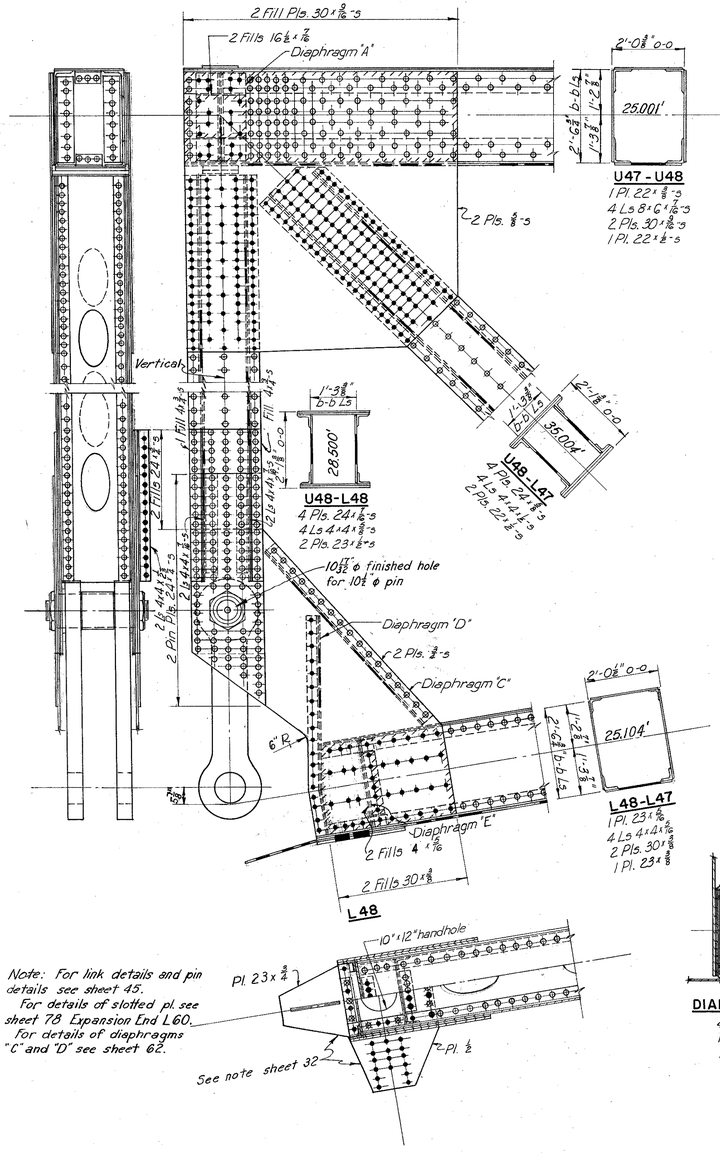
U48

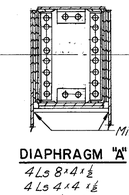


U44 Cut all members except 2 Pls. 14 x ⅜ -s

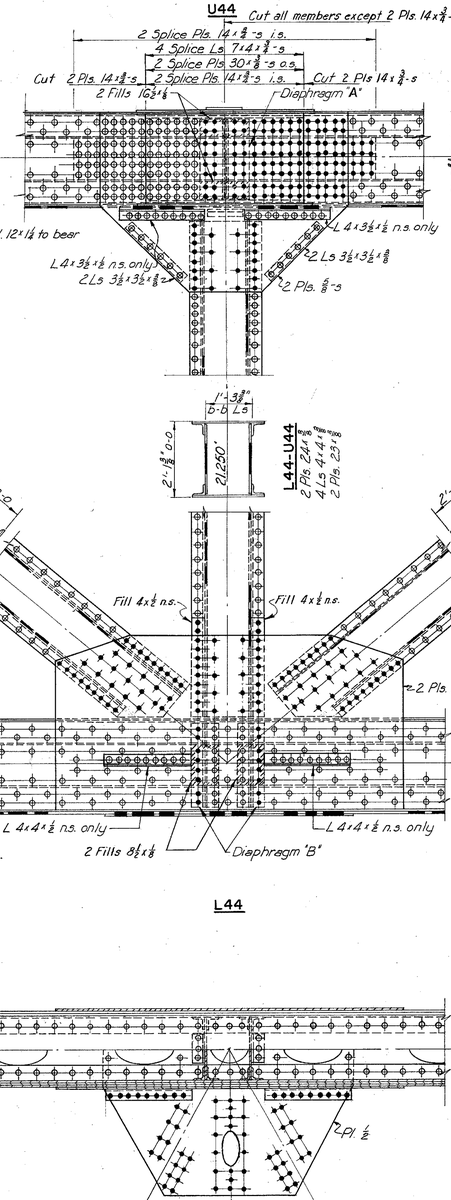


U43

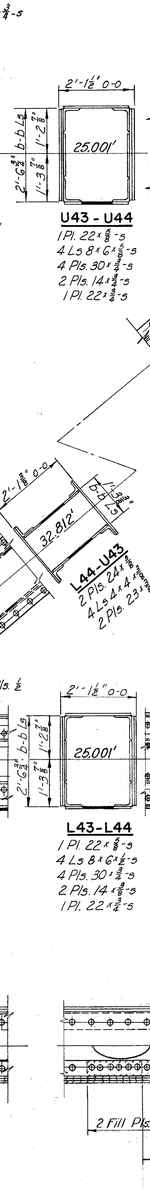




DIAPHRAGM "A"
4 Ls 8 x 4 x 1
4 Ls 4 x 4 x 1
1 Pl. ⅝



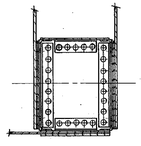
DIAPHRAGM "B"
6 Ls 4 x 4 x ½
Pl. ½



L43-L44
1 Pl. 22 x ⅜ -s
4 Ls 8 x 6 x ⅝ -s
4 Pls. 30 x ⅜ -s
2 Pls. 14 x ⅜ -s
1 Pl. 22 x ⅜ -s

L42-L43
1 Pl. 22 x ⅜ -s
4 Ls 8 x 6 x 7/16 -s
4 Pls. 30 x ½ -s
2 Pls. 14 x 7/16 -s
1 Pl. 22 x ½ -s

Note: For link details and pin details see sheet 45.
For details of slotted pl. see sheet 78 Expansion End L60.
For details of diaphragms "C" and "D" see sheet 62.



DIAPHRAGM "E"
4 Ls 4 x 4 x ½
Pl. ½

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
TRUSS DETAILS UNIT 4 - SOUTH
PANELS 43, 44, & 48

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE DLC DATE 4-30-54
TRCD GBB DATE 9-7-54
CKD FKD DATE 10-9-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.61

268

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

60
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U 43

U 44

U 48

U42-U43
1-Pl 22 x 7/8"-s
4-L5 8 x 6 x 7/8-s
4-Pls. 30 x 3/4-s
2-Pls. 14 x 7/16-s
1-Pl 22 x 3/4-s

U43-U44
1-Pl 22 x 5/8-s
4-L5 8 x 6 x 7/8-s
4-Pls 30 x 3/4-s
2-Pls 14 x 3/4-s
1-Pl 22 x 3/4-s

U47-U48
1-Pl 22 x 5/8-s
4-L5 6 x 6 x 7/8-s
2-Pls. 30 x 5/16-s
1-Pl 22 x 1/2-s

DIAPHRAGM "G"
4-L5 8 x 4 x 1/2
4-L5 4 x 4 x 1/2
1-Pl 1/2

DIAPHRAGM "A"
4-L5 8 x 4 x 1/2
4-L5 4 x 4 x 1/2
1-1/2" Pl.

DIAPHRAGM "B"
1-Pl - 1/2
6-L5 4 x 4 x 1/2

DIAPHRAGM "C"
2-L5 4 x 4 x 5/8
1-Pl 24 x 7/16

DIAPHRAGM "D"
2-L5 4 x 4 x 5/8
1-Pl 24 x 7/16
2-L5 4 x 4 x 1/2

L42-L43
1-Pl 22 x 5/8-s
4-L5 8 x 6 x 1/2-s
4-Pls. 30 x 7/16-s
2-Pls. 14 x 5/16-s
1-Pl 22 x 1/2-s

L43-L44
1-Pl 22 x 5/8-s
4-L5 8 x 6 x 7/8-s
4-Pls. 30 x 3/4-s
2-Pls. 14 x 3/4-s
1-Pl 22 x 3/4-s

L47-L48
1-Pl 23 x 7/16
4-L5 4 x 4 x 1/2
2-Pls. 30 x 3/8
1-Pl 23 x 3/8

L42-L43
2-Pls. 24 x 3/8
4-L5 4 x 4 x 1/2
2-Pls. 23 x 7/16

L43-U43
2-Pls. 24 x 3/8
4-L5 4 x 4 x 1/2
2-Pls. 23 x 7/8

L44-U44
2-Pls. 24 x 3/8
4-L5 4 x 4 x 1/2
2-Pls. 23 x 7/8

U43-L44
2-Pls. 24 x 3/8
4-L5 4 x 4 x 1/2
2-Pls. 23 x 7/8

L44-U45
2-Pls. 24 x 3/8
4-L5 4 x 4 x 1/2
2-Pls. 23 x 7/8

L48-U48
4-Pls. 24 x 1/2-s
4-L5 4 x 4 x 5/8-s
2-Pls. 23 x 1/2-s

U47-L48
4-Pls. 24 x 5/8-s
4-L5 4 x 4 x 5/8-s
2-Pls. 22 x 7/8-s

L42-L43
1-Pl 22 x 5/8-s
4-L5 8 x 6 x 1/2-s
4-Pls. 30 x 7/16-s
2-Pls. 14 x 5/16-s
1-Pl 22 x 1/2-s

L43-L44
1-Pl 22 x 5/8-s
4-L5 8 x 6 x 7/8-s
4-Pls. 30 x 3/4-s
2-Pls. 14 x 3/4-s
1-Pl 22 x 3/4-s

L47-L48
1-Pl 23 x 7/16
4-L5 4 x 4 x 1/2
2-Pls. 30 x 3/8
1-Pl 23 x 3/8

Note : for Link details and pin details, see Sheet 45.
For details of slotted plate see Sheet 78, Expansion End L60.
For details of Diaphragm "E" see Sheet 59.

L 44

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

TRUSS DETAILS, UNIT 4 NORTH
PANELS 43, 44, AND 48

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE D.L.C. DATE 3-31-54
TRCD E.A.H. DATE 9-7-54
CKD E.K.D. DATE 10-20-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.60

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

59
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U 40

U 41

U 42

U40-U41
1 Pl. 22 x 7/8"-S
4 Ls 8 x 6 x 13/16"-S
2 Pls. 30 x 7/8"-S
1 Pl. 22 x 1/2"-S

U41-U42
1 Pl. 22 x 7/8"-S
4 Ls 8 x 6 x 13/16"-S
4 Pls. 30 x 1/2"-S
2 Pls. 14 x 1/2"-S
1 Pl. 22 x 1/2"-S

U42-U43
1 Pl. 22 x 7/8"-S
4 Ls 8 x 6 x 13/16"-S
4 Pls. 30 x 1/2"-S
2 Pls. 14 x 1/2"-S
1 Pl. 22 x 1/2"-S

DIAPHRAGM "A"
4 Ls 8 x 4 x 1/2
4 Ls 4 x 4 x 1/2
1 Pl. 1/2

DIAPHRAGM "E"
4 Ls 4 x 4 x 1/2
Pl. 1/2

L40

L41

L42

L40-L41
1 Pl. 23 x 7/8"
4 Ls 4 x 4 x 13/16"
2 Pls. 30 x 7/8"
1 Pl. 23 x 7/8"

L41-L41
2 Pls. 24 x 1/2"-S
4 Ls 4 x 4 x 1/2"-S
2 Pls. 23 x 7/8"-S

L41-L42
1 Pl. 22 x 7/8"-S
4 Ls 8 x 6 x 13/16"-S
2 Pls. 30 x 7/8"-S
1 Pl. 22 x 1/2"-S

U40-L40
4 Pls. 24 x 1/2"-S
4 Ls 4 x 4 x 1/2"-S
2 Pls. 23 x 1/2"-S

U42-L42
2 Pls. 24 x 1/2"-S
4 Ls 4 x 4 x 1/2"-S
2 Pls. 23 x 1/2"-S

U42-L43
2 Pls. 24 x 1/2"-S
4 Ls 4 x 4 x 1/2"-S
2 Pls. 23 x 1/2"-S

L42-L43
1 Pl. 22 x 7/8"-S
4 Ls 8 x 6 x 13/16"-S
4 Pls. 30 x 1/2"-S
2 Pls. 14 x 1/2"-S
1 Pl. 22 x 1/2"-S

DIAPHRAGM "B"
6 Ls 4 x 4 x 1/2
1 Pl. 1/2

Note: For Link details, Pin details and details of slotted plate, see Sheet 45. See Sheet 60 for Diaphragms "C" and "D".

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17.5

TRUSS DETAILS UNIT 4 NORTH
PANELS 40, 41 & 42

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE O.L.C. DATE 4-12-54
TRCD. E.V.H.N. DATE 9-7-54
CKD. E.K.D. DATE 10-11-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.59

269

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

58
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

TENSION CHORD – SOUTH TRUSS

L40 L41	L41 L42	L42 L43	L43 L44	L44 L45	L45 L46	L46 L47	L47 L48
0	+ 1015	+ 1865	+ 2509	+ 2509	+ 1865	+ 1015	0
0	+ 812	+ 1492	+ 2007	+ 2007	+ 1492	+ 812	0
0	+ 262	+ 470	+ 620	+ 620	+ 470	+ 262	0
0	+ 434	+ 780	+ 1027	+ 1027	+ 780	+ 434	0
0	+ 11	+ 21	+ 29	+ 29	+ 21	+ 11	0
0	+ 1257	+ 2293	+ 3063	+ 3063	+ 2293	+ 1257	0
4x4x 5/16	8x6x 7/16	8x6x 7/16	8x6x ½	8x6x ½	8x6x 7/16	8x6x 7/16	4x4x 5/16
30x ⅜	30x ½	30x ½	30x ½	30x ½	30x ½	30x ½	30x ⅜
23x 5/16	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	23x 5/16
23x ⅜*)	22x ½**)	22x ½*)	22x ½**)	22x ½**)	22x ½*)	22x ½*)	23x ⅜*)
		30x ½	30x ½	30x ½	30x ½		
		14x 7/16	14x ½	14x ½	14x 7/16		
16,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000
43.79	67.47	109.72	150.25	150.25	109.72	67.47	43.79
36.60	57.85	94.35	129.38	129.38	94.35	57.85	36.60
0	21,730	24,310	23,670	23,670	24,310	21,730	0
C	S	S	S	S	S	S	C

COMPRESSION CHORD – SOUTH TRUSS

U40 U41	U41 U42	U42 U43	U43 U44	U44 U45	U45 U46	U46 U47	U47 U48
- 1013	- 1861	- 2509	- 2681	- 2681	- 2509	- 1861	- 1013
- 811	- 1489	- 2007	- 2145	- 2145	- 2007	- 1489	- 811
- 259	- 469	- 620	- 643	- 643	- 620	- 469	- 259
- 430	- 779	- 1027	- 1066	- 1066	- 1027	- 779	- 430
- 11	- 21	- 29	- 31	- 31	- 29	- 21	- 11
- 1252	- 2289	- 3063	- 3242	- 3242	- 3063	- 2289	- 1252
8x6x 7/16	8x6x 7/16	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x 7/16	8x6x 7/16
30x 9/16	30x 9/16	30x ½	30x ½	30x ½	30x ½	30x 9/16	30x 9/16
22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜
22x ½*)	22x ½*)	22x ½**)	22x ½**)	22x ½**)	22x ½**)	22x ½*)	22x ½*)
	30x 9/16	30x ½	30x ½	30x ½	30x 9/16		
	14x 7/16	14x ½	14x ½	14x ½	14x 7/16		
300	300	300	300	300	300	300	300
19,630	19,620	19,640	19,630	19,630	19,640	19,620	19,630
71.22	117.22	156.69	167.19	167.19	156.69	117.22	71.22
67.85	117.22	156.69	167.19	167.19	156.69	117.22	67.85
18,450	19,530	19,550	19,390	19,390	19,550	19,530	18,450
S	S	S	S	S	S	S	S

LINE	MEMBER	
1	Dead Load	
2	0.8 Dead Load	
3	Live Load + Imp.=Tension	
4	Reduced L L + Imp.=Tension	
5	Live Load + Imp.=Comp.	
6	Reduced L L + Imp.=Comp.	
7	Reduced L L + Imp.=Ten. xD (CF)[e]	
8	Reduced L L + Imp.=Comp. xD (CF)[e]	
9	Ratio= Line 4 / Line 1 (Comp.) or Line 6 / Line 1 (Ten.)	
10	L L Sidewalk=Tension	
11	L L Sidewalk=Comp.	
12	Direct Design Stress	
13	Reverse Design Stress	
14		
15		
16		
17		
	SECTION	Holes out for Tension
a	Flange Angles	2
b	1 st Web Plate	4
c	Top Cover Plate	3
d	Bottom Cover Plate	2
g	2 nd Web Plate	4
h	Inside Web Plate	2
25	Length	In.
26	Min. Radius of Gyration	In.
27	Allowable Stress	Lbs./Sq. In.
28	Actual Gross Area	Sq. In.
29	Net Area	Sq. In.
30	Actual Unit Stress	Lbs./Sq. In.
31	Material	

TENSION CHORD – NORTH TRUSS

L40 L41	L41 L42	L42 L43	L43 L44	L44 L45	L45 L46	L46 L47	L47 L48
0	+ 1101	+ 2028	+ 2729	+ 2729	+ 2028	+ 1101	0
0	+ 881	+ 1623	+ 2183	+ 2183	+ 1623	+ 881	0
0	+ 288	+ 518	+ 682	+ 682	+ 518	+ 288	0
0	+ 478	+ 858	+ 1131	+ 1131	+ 858	+ 478	0
0	+ 13	+ 23	+ 31	+ 31	+ 23	+ 13	0
0	+ 1372	+ 2504	+ 3345	+ 3345	+ 2504	+ 1372	0
4x4x 5/16	8x6x 7/16	8x6x ½	8x6x ⅜	8x6x ⅜	8x6x ½	8x8x 7/16	4x4x 5/16
30x ⅜	30x 9/16	30x 9/16	30x ½	30x ⅜	30x 9/16	30x 9/16	30x ⅜
23x 5/16	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	23x 5/16
23x ⅜*)	22x ½*)	22x ½*)	22x ½**)	22x ½**)	22x ½*)	22x ½*)	23x ⅜*)
		30x 9/16	30x ½	30x ½	30x 9/16		
		14x ½	14x ⅜	14x ⅜	14x ½		
16,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000
43.79	71.22	122.25	163.69	163.69	122.25	71.22	43.79
36.60	61.10	105.13	140.82	140.82	105.13	61.10	36.60
0	22,460	23,800	23,760	23,760	23,800	22,460	0
C	S	S	S	S	S	S	C

COMPRESSION CHORD – NORTH TRUSS

U40 U41	U41 U42	U42 U43	U43 U44	U44 U45	U45 U46	U46 U47	U47 U48
- 1098	- 2023	- 2729	- 2916	- 2916	- 2729	- 2023	- 1098
- 879	- 1619	- 2183	- 2333	- 2333	- 2183	- 1619	- 879
- 285	- 517	- 682	- 708	- 708	- 682	- 517	- 285
- 473	- 856	- 1131	- 1173	- 1173	- 1131	- 856	- 473
- 13	- 23	- 31	- 34	- 34	- 31	- 23	- 13
- 1365	- 2498	- 3345	- 3540	- 3540	- 3345	- 2498	- 1365
8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜
30x 9/16	30x 9/16	30x ½	30x ½	30x ½	30x ½	30x 9/16	30x 9/16
22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜	22x ⅜
22x ½*)	22x ½*)	22x ½**)	22x ½**)	22x ½**)	22x ½*)	22x ½*)	22x ½*)
	30x 9/16	30x ½	30x ½	30x ½	30x 9/16		
	14x ½	14x 7/16	14x ½	14x ½	14x ½		
300	300	300	300	300	300	300	300
19,630	19,630	19,640	19,640	19,640	19,640	19,630	19,630
80.94	128.69	170.92	179.67	179.67	170.92	128.69	80.94
77.57	128.69	170.92	179.67	179.67	170.92	128.69	77.57
17,600	19,400	19,570	19,700	19,700	19,570	19,400	17,600
S	S	S	S	S	S	S	S

TENSION WEB MEMBERS – SOUTH TRUSS

U40 L41	U41 L42	U42 L43	U43 L44	U44 L45	U45 L46	U46 U47	U47 U48
+ 1418	+ 1151	+ 850	+ 227	+ 227	+ 850	+ 1151	+ 1418
+ 1135	+ 921	+ 680	+ 182	+ 182	+ 680	+ 921	+ 1135
+ 364	+ 316	+ 263	+ 160	+ 160	+ 263	+ 316	+ 364
	- 10	- 28	- 99	- 99	- 28	- 10	
+ 603	+ 524	+ 436	+ 265	+ 265	+ 436	+ 524	+ 603
	- 16	- 45	- 155	- 155	- 45	- 16	
+ 16	+ 14	+ 11	+ 6	+ 6	+ 11	+ 14	+ 16
		- 1	- 4	- 4	- 1		
+ 1754	+ 1459	+ 1127	+ 453	+ 453	+ 1127	+ 1459	+ 1754
4x4x ½	4x4x ½	4x4x ½	4x4x ⅜	4x4x ⅜	4x4x ½	4x4x ½	4x4x ½
24x ⅜	24x ½	24x ⅜	24x ⅜	24x ⅜	24x ⅜	24x ⅜	24x ⅜
22x ½**)	22x 7/16**)	23x 7/16**)	23x ⅜**)	23x ⅜**)	23x 7/16**)	22x 7/16**)	22x ½**)
24x ⅜	24x ½					24x ½	24x ⅜
24,000	24,000	24,000	18,000	18,000	24,000	24,000	24,000
87.00	73.50	56.38	39.19	39.19	56.38	73.50	87.00
73.50	61.75	46.88	32.44	32.44	46.88	61.75	73.50
23,870	23,630	24,030	13,950	13,950	24,030	23,630	23,870
S	S	S	C	C	S	S	S

COMPRESSION WEB MEMBERS – SOUTH TRUSS

U40 L40	U41 L41	U42 L42	U43 L43	U44 L44	U45 L45	U46 L46	U47 L47	U48 L48
- 1147	- 897	- 671	- 267	- 127	- 267	- 671	- 897	- 1077
- 918	- 718	- 537	- 214	- 102	- 214	- 537	- 718	- 862
		+ 9	+ 35		+ 35	+ 9		
- 269	- 228	- 183	- 108	- 47	- 108	- 183	- 228	- 264
		+ 14	+ 58		+ 58	+ 14		
- 445	- 377	- 303	- 178	- 77	- 178	- 303	- 377	- 437
			+ 1		+ 1			
- 13	- 11	- 8	- 4	- 1	- 4	- 8	- 11	- 13
- 1376	- 1106	- 848	- 396	- 180	- 396	- 848	- 1106	- 1312
4x4x ⅜	4x4x ½	4x4x ½	4x4x ⅜	4x4x ⅜	4x4x ⅜	4x4x 7/16	4x4x ½	4x4x ⅜
24x 7/16	24x 11/16	24x 9/16	24x ⅜	24x ⅜	24x ⅜	24x 9/16	24x 11/16	24x 7/16
23x ½**)	23x 7/16**)	23x ½**)	23x ⅜**)	23x ⅜**)	23x ⅜**)	23x ½**)	23x ½**)	23x ½**)
24x 7/16								24x 7/16
342	294	274.5	255	255	255	274.5	294	342
7.59	7.59	7.62	7.70	7.70	7.70	7.62	7.59	7.59
19,060	19,310	19,400	14,720	14,720	14,720	19,400	19,310	19,060
73.44	59.38	49.99	39.19	39.19	39.19	49.99	59.38	73.44
73.44	57.83	44.59	31.88	31.88	31.88	44.59	57.83	73.44
18,730	19,140	19,000	12,410	5,640	12,410	19,000	19,140	17,870
S	S	S	C	C	C	S	S	S

TENSION WEB MEMBERS – NORTH TRUSS

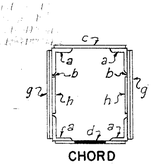
U40 L41	U41 L42	U42 L43	U43 L44	L44 U45	U45 L46	U46 L47	U47 L48
+ 1538	+ 1254	+ 926	+ 247	+ 247	+ 926	+ 1254	+ 1538
+ 1231	+ 1003	+ 741	+ 198	+ 198	+ 741	+ 1003	+ 1231
+ 401	+ 348	+ 289	+ 176	+ 176	+ 289	+ 348	+ 401
	- 12	- 31	- 109	- 109	- 31	- 12	
+ 664	+ 577	+ 480	+ 291	+ 291	+ 480	+ 577	+ 664
-	- 19	- 52	- 181	- 181	- 52	- 19	
+ 18	+ 15	+ 12	+ 6	+ 6	+ 12	+ 15	+ 18
		- 1	- 3	- 3	- 1		
+ 1913	+ 1595	+ 1233	+ 495	+ 495	+ 1233	+ 1595	+ 1913
4x4x ½	4x4x ½	4x4x ½	4x4x ⅜	4x4x ⅜	4x4x ½	4x4x ½	4x4x ½
24x ⅜	24x ½	24x ⅜	24x ⅜	24x ⅜	24x ⅜	24x ⅜	24x ⅜
22x ½**)	22x 7/16**)	23x ½**)	23x ⅜**)	23x ⅜**)	23x 7/16**)	22x 7/16**)	22x ½**)
24x ⅜	24x ½					24x ½	24x ⅜
24,000	24,000	24,000	18,000	18,000	24,000	24,000	24,000
95.26	80.26	63.14	39.19	39.19	63.14	80.26	95.26
79.51	66.51	51.64	32.44	32.44	51.64	66.51	79.51
24,070	23,980	23,870	15,250	15,250	23,870	23,980	24,070
S	S	S	C	C	S	S	S

COMPRESSION WEB MEMBERS – NORTH TRUSS

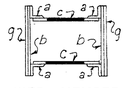
U40 L40	U41 L41	U42 L42	U43 L43	U44 L44	U45 L45	U46 L46	U47 L47	U48 L48
- 1240	- 987	- 746	- 306	- 154	- 306	- 746	- 987	- 1165
- 992	- 790	- 597	- 245	- 123	- 245	- 597	- 790	- 932
		+ 9	+ 39		+ 39	+ 9		
- 296	- 251	- 201	- 119	- 51	- 119	- 201	- 251	- 290
		+ 16	+ 64		+ 64	+ 16		
- 491	- 415	- 333	- 196	- 85	- 196	- 333	- 415	- 481
			+ 1		+ 1			
- 14	- 12	- 8	- 4	- 1	- 4	- 8	- 12	- 14
- 1497	- 1217	- 938	- 445	- 209	- 445	- 938	- 1217	- 1427
8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜	8x6x ⅜
24x ½	24x 11/16	24x 9/16	24x ⅜	24x ⅜	24x ⅜	24x 9/16	24x 11/16	24x ½
23x ½**)	23x ½**)	23x 7/16**)	23x ⅜**)	23x ⅜**)	23x ⅜**)	23x ½**)	23x ½**)	23x ½**)
342	294	274.5	255	255	255	274.5	294	342
7.55	7.68	7.66	7.70	7.70	7.70	7.66	7.68	7.55
19,050	19,320	19,410	14,720	14,720	14,720	19,410	19,320	19,050
79.44	64.44	53.38	39.19	39.19	39.19	53.38	64.44	79.44
79.44	62.89	48.17	31.88	31.88	31.88	48.17	62.89	79.44
18,860	19,350	19,470	13,960	6,550	13,960	19,470	19,350	17,960
S	S	S	C	C	C	S	S	S

S = Special Steel
C = Carbon Steel
*) = Handhole 11" Wide
**) = Handhole 10" Wide

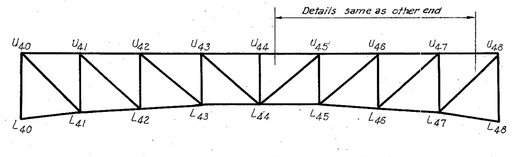
All dead and live load stresses are in kips
Line 29, - Net area for tension or effective gross area for compression.



CHORD



WEB MEMBER



For truss dimensions see Framing Plan, Sh. 21

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5
STRESS SHEET UNIT 4
NORTH AND SOUTH TRUSSES
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE D.M.C. DATE 5-7-54
TRCD E.H.L. DATE 8-25-54
CKD E.L. DATE 9-28-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.58

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

57
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

1 Fill 23 x 5/16 S. top. 1 Fill 23 x 3/8 S. bott.
1 Spl. Pl. 23 x 1/2 -S.
1 Spl. Pl. 10 x 3/8 -S.-I.S.
1 Fill 12 x 7/16
Diaphragm "C"
1 Fill 12 x 1/2
1 Spl. Pl. 10 x 3/4 -S.-I.S.
1 Spl. Pl. 23 x 3/4 -S.
Stop Members

Diaphragm "A"
1 Fill 12 x 1 5/16
1 Fill 12 x 1 3/16

Diaphragm "A"
1 Fill 12 x 1 5/16
1 Fill 12 x 1 9/16

U301

U300

2 Spl. Pls. 30 x 3/8 -S.
U302
2 Fills 30 x 1/8 -S.
2 Spl. Pls. 30 x 5/8 -S.
Stop 2 Pls. 30 x 3/8 -S.

2 Fills 14 x 7/16

2 Fills 14 x 7/16

3'-0"

2'-0 1/2" o.-o. Webs
25.001'
Hole
1'-3 7/8" | 1'-2 7/8"
2'-6 3/4" b-b Ls

U303 - L302
4 Ls 8 x 6 x 3/4 -S.
2 Pls. 30 x 5/8 -S.
1 Pl. 22 x 3/8 -S
1 Pl. 22 x 3/4 -S.

1 Pl. 12 x 1 1/4
L 4 x 3 1/2 x 1/2
2 Pls. 3/4 -S.
2 Ls 3 1/2 x 3 1/2 x 3/8

2'-1 1/2" o.-o. Webs
25.001'
Hole
1'-3 7/8" | 1'-2 7/8"
2'-6 3/4" b-b Ls

U302 - U301
4 Ls 8 x 6 x 7/16 -S.
2 Pls. 30 x 3/8 -S.
1 Pl. 23 x 5/16 -S.
1 Pl. 23 x 3/8 -S

2 Ls 3 1/2 x 3 1/2 x 3/8
1 Pl. 12 x 1 1/4
L 4 x 3 1/2 x 1/2
2 Pls. 5/8" -S.

2'-1 1/2" o.-o. Webs
22.001'
Hole
1'-3 7/8" | 1'-2 7/8"
2'-6 3/4" b-b Ls

U301 - U300
4 Ls 8 x 6 x 7/16 -S.
2 Pls. 30 x 3/8 -S.
1 Pl. 23 x 5/16 -S.
1 Pl. 23 x 3/8 -S.

2 Fills 14 x 7/16
1 Pl. 12 x 1 1/4
2 Pls. 1/2"

10" ϕ Hole
Mill to bear
Typical at Upper Joints

1'-3 3/8" b-b Ls
Holes
1'-3 3/8" b-b Ls

L300 - U300
4 Ls 4 x 4 x 3/8
2 Pls. 24 x 3/8
2 Pls. 23 x 3/8

DIAPHRAGM "A"
4 Ls 8 x 4 x 1/2
4 Ls 4 x 4 x 1/2
1 Pl. 1/2"

DIAPHRAGM "B"
6 Ls 4 x 4 x 1/2
1 Pl. 1/2"

DIAPHRAGM "C"
2 Ls 8 x 4 x 1/2
2 Ls 8 x 6 x 1/2
4 Ls 6 x 4 x 1/2
1 Pl. 1/2"

1'-5 3/8" b-b Ls
2'-1 3/16" o.-o. Webs
Hole 2
50.175
U303 - L302
4 Pls. 4 x 4 x 7/16 -S.
2 Pls. 22 x 5/16 -S.
2 Pls. 23 x 5/16 -S.

U302 - M302 - L302
4 Ls 4 x 4 x 3/4 -S.
4 Pls. 26 x 1/2 -S.
2 Pls. 23 x 7/16 -S.
4 Ls 4 x 4 x 3/8 -S.-I.s. M302, L302
1'-3 3/8" b-b Ls
2'-1 3/16" o.-o. Webs
Hole
43.500'

1'-3 3/8" b-b Ls
2'-1 3/16" o.-o. Webs
Hole 2
43.886'
U302 - L301
4 Ls 4 x 4 x 5/8 -S.
4 Pls. 24 x 9/16 -S.
2 Pls. 23 x 5/8 -S.

1'-3 3/8" b-b Ls
Hole 2
36.032'
2'-1 3/16" o.-o. Webs
U301 - L301
4 Ls 4 x 4 x 5/8 -S.
4 Pls. 24 x 1/2 -S.
2 Pls. 23 x 7/16 -S.

Hole 1
38.053'
U301 - L300
4 Ls 4 x 4 x 1/2 -S.
4 Pls. 24 x 3/8
2 Pls. 22 x 7/16 -S.

28.500'
6"R.
1 Fill 4 x 3/4
For details of Link and Pin see Sh. 52
For details of Diaphragm see Sh. 52
For details of Wind Shear device see Detail 'A' Sh. 52
2 Pls. 3/4 -S.
Near side only
2 Pls. 3/4 -S.
2 Fills 30 x 3/16 -S.
2 Fills 8 7/16"

2 Ls 4 x 4 x 7/16 -S.
2 Pls. 3/4" -S.
2 Ls 3 1/2 x 3 1/2 x 3/8
1 L 4 x 4 x 1/2
Stop outside Pls. 30 x 3/16 -S.
Stop 6 outside Pls. 30 x 3/4 -S.

2'-1 1/2" o.-o. Webs
26.092'
Hole 7
2'-6 3/4" b-b Ls
1'-3 7/8" | 1'-2 7/8"

L302 - L301
4 Ls 8 x 6 x 7/16 -S.
4 Pls. 30 x 9/16 -S.
1 Pl. 22 x 3/8 -S.
1 Pl. 22 x 1/2 -S.
2 Pls. 14 x 3/8 -S.-I.S.

2 Pls. 3/4 -S.
2 Ls 3 1/2 x 3 1/2 x 3/8
1 L 4 x 4 x 1/2
Stop 2 Pls. 14 x 3/8 - Inside Pls.
Stop 2 Pls. 30 x 3/16 outside Pls.

2'-0 3/8" o.-o. Webs
26.317'
Hole 7
2'-6 3/4" b-b Ls
1'-3 7/8" | 1'-2 7/8"

L301 - L300
4 Ls 8 x 6 x 7/16 -S.
2 Pls. 30 x 3/16 -S.
1 Pl. 22 x 3/8 -S.
1 Pl. 22 x 1/2 -S.

2'-1 1/2" o.-o. Webs
27 1/16"
Hole 7
1'-2 7/8" | 1'-3 7/8"
2'-6 3/4" b-b Ls

L303 - L302
4 Ls 8 x 6 x 1/8 -S.
4 Pls. 30 x 3/4 -S.
1 Pl. 22 x 1/2 -S.
1 Pl. 22 x 5/16 -S.

L 302
Diaphragm "B"
2 Spl. Pls. 30 x 3/16 -S.
2 Fills 30 x 3/16 -S.
2 Spl. Pls. 28 x 1/2 -S.-I.S.
2 Spl. Pls. 14 x 3/16 -S.
1 Pl. 10 x 3/8 S.-I.S. bo. ff.
4 Fills 6 1/2 x 1/2 -S.
1 Pl. 22 x 1/2 -S. top
1 Fill 22 x 5/8 -S. - bott.
1 Fill 22 x 5/8 -S.
2 Ls 3 1/2 x 3 1/2 x 3/8
1 Pl. 1/2 S.
℄ Lateral
℄ Strut

L301
Diaphragm "B"
10" Dia. Hole
1 Pl. 1/2
℄ Lateral
℄ Strut

L300
Diaphragm "B"
10" Dia. Handhole
1 L 4 x 4 x 1/2
1 Pl. 1/2
℄ Lateral
℄ Strut

Note:
For details and connections of access ladder and walkways to navigation lights, see Sheet 102.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5
TRUSS DETAILS, UNIT 3 SOUTH
PANELS 302, 301 AND 300.
CLEVELAND GUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE G.A. DATE 10-13-54
TRCD. H.Y.S. DATE 11-2-54
CKD. J.G.S. DATE 11-4-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

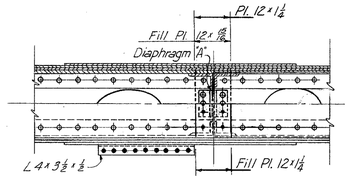
914-1A SHEET 2.57

MICROFILMED
FEB 15 1955

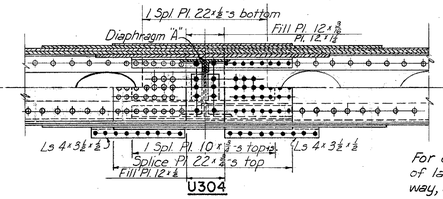
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

56
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

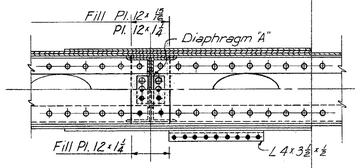


U305

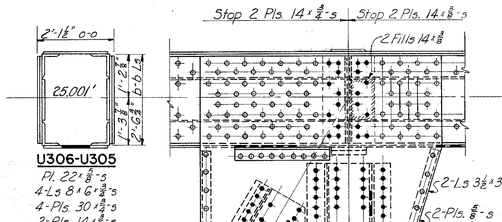


U304

For details and connections of ladder and access walkway, see Sh. 101.



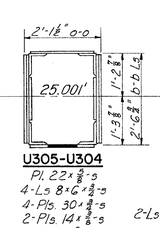
U303



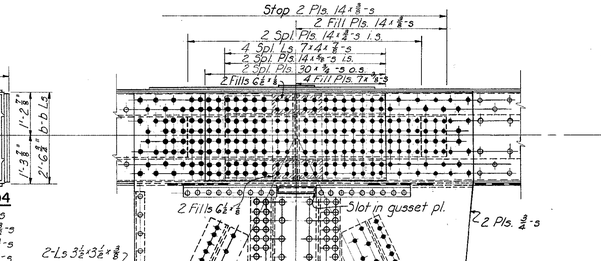
U306-U305
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
4-Pls. 30"x⅜"-S
2-Pls. 14"x⅜"-S
Pl. 22"x⅜"-S

L306-U305
2-Pls. 23"x⅝"-S
4-Ls 6"x4"x⅜"-S
2-Pls. 28"x7/16"-S

L305-U305
2-Pls. 23"x⅝"-S
4-Ls 6"x4"x⅜"-S
2-Pls. 28"x7/16"-S

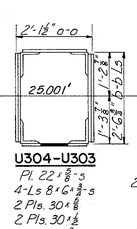


U305-U304
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
4-Pls. 30"x⅜"-S
2-Pls. 14"x⅜"-S
Pl. 22"x⅜"-S

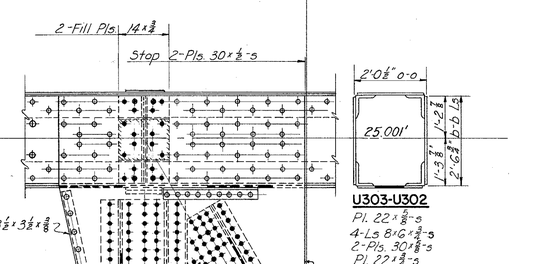


U304-M304-L304
2-Pls. 30"x⅜"-S
4-Ls 7"x4"x⅜"-S
2-Pls. 23"x⅞"-S
Add 4-Ls 4"x4"x⅜"-S below M4

U304-L303
2-Pls. 24"x⅜"-S
4-Ls 4"x4"x½"-S
2-Pls. 28"x⅝"-S



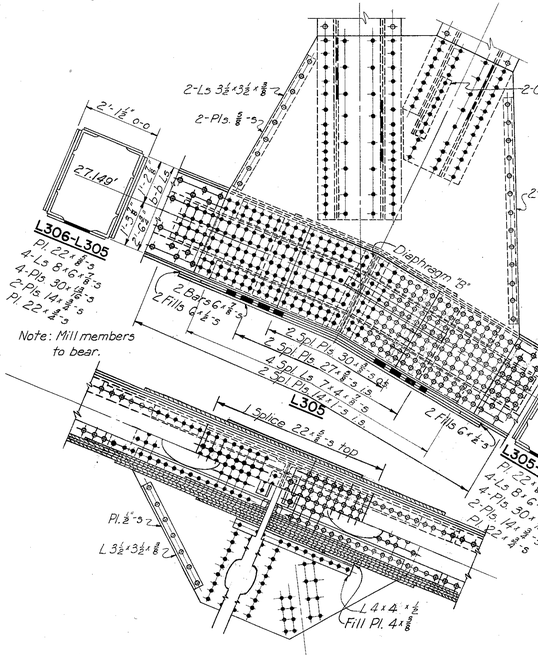
U304-U303
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
2 Pls. 30"x⅜"
2 Pls. 30"x½"
Pl. 22"x⅜"-S



U303-U302
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
2-Pls. 30"x⅝"-S
Pl. 22"x⅜"-S

U303-M303-L303
2-Pls. 28"x⅝"-S
4-Ls 6"x4"x⅜"-S
2-Pls. 23"x⅝"-S
4-Ls 4"x4"x⅜"-S
(Add below M3)

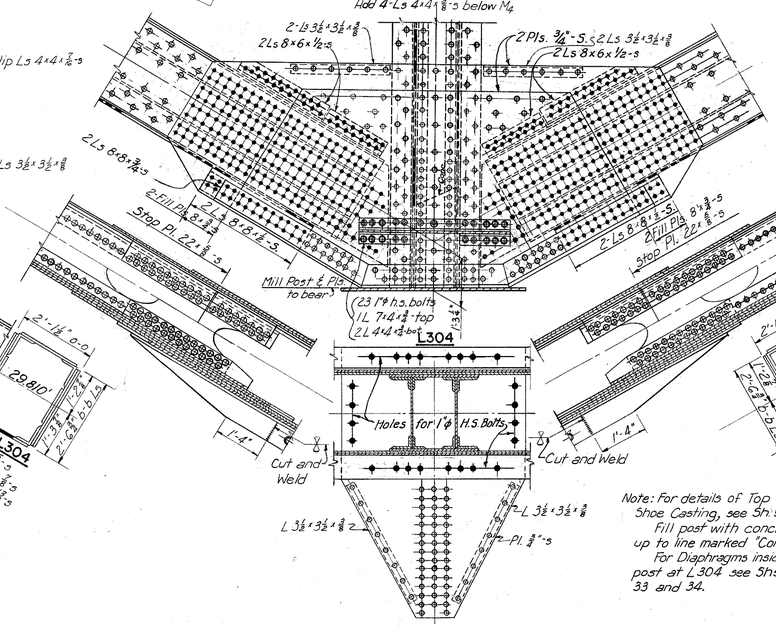
U303-L302
2 Pls. 23"x⅝"-S
4-Ls 4"x4"x⅜"-S
2 Pls. 26"x⅝"-S



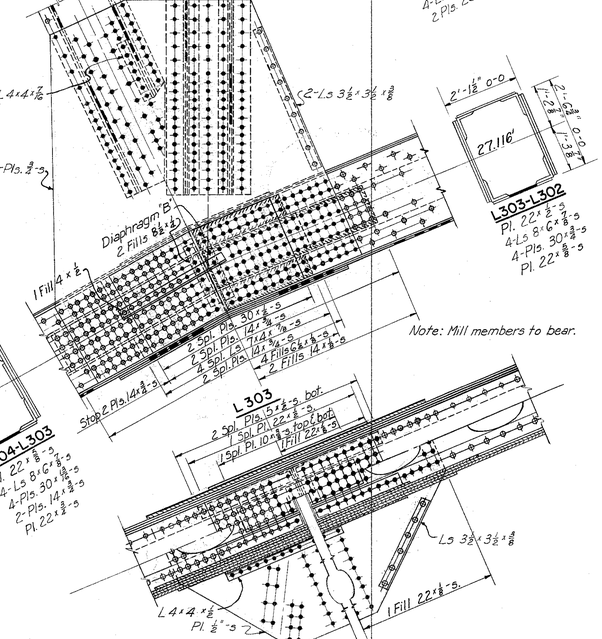
L306-L305
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
4-Pls. 30"x⅜"-S
2-Pls. 14"x⅜"-S
Pl. 22"x⅜"-S

Note: Mill members to bear.

L305-L304
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
4-Pls. 30"x⅜"-S
2-Pls. 14"x⅜"-S
Pl. 22"x⅜"-S



Note: For details of Top Shoe Casting, see Sh. 96. Fill post with concrete up to line marked "Conc." For Diaphragms inside post at L 304 see Shs. 33 and 34.



L303-L302
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
4-Pls. 30"x⅜"-S
Pl. 22"x⅝"-S

L304-L303
Pl. 22"x⅝"-S
4-Ls 8"x6"x⅝"-S
4-Pls. 30"x⅜"-S
2-Pls. 14"x⅜"-S
Pl. 22"x⅜"-S

Note: For details of Diaphragms "A" and "B", see Sh. 57.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5
TRUSS DETAILS, UNIT 3 SOUTH
PANELS 305, 304 AND 303
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3/4"=1'-0"
MADE SEE DATE 6-20-54
TRCD. N.A.M. DATE 7-27-54
CKD. J.G.S. DATE 11-4-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.56

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

55
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U309

U308

U307

U306

U310–U309
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 3/8"-s
2 Pls. 14 x 3/8"-s
Pl. 22 x 5/8"-s

U309–U308
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 3/8"-s
2 Pls. 14 x 3/8"-s
Pl. 22 x 5/8"-s

U308–U307
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 3/8"-s
2 Pls. 14 x 3/8"-s
Pl. 22 x 5/8"-s

U307–U306
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 3/8"-s
2 Pls. 14 x 3/8"-s
Pl. 22 x 5/8"-s

U306–U305
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 3/8"-s
2 Pls. 14 x 3/8"-s
Pl. 22 x 5/8"-s

U309–L309
2 Pls. 23 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 24 x 3/8"-s

U308–L308
2 Pls. 23 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 24 x 3/8"-s

U307–L307
2 Pls. 23 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 24 x 3/8"-s

U306–M306–L306
2 Pls. 23 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 26 x 3/8"-s
(Add 4 Ls 4 x 4 x 7/16"-s below Mz.)

U310–L309
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 15/16"-s
2 Pls. 14 x 5/8"-s
Pl. 22 x 5/8"-s

L309–U308
2 Pls. 23 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 24 x 3/8"-s

L308–U307
2 Pls. 24 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 23 x 3/8"-s

L307–U306
2 Pls. 24 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 23 x 3/8"-s

L306–U305
2 Pls. 26 x 3/8"-s
4 Ls 4 x 4 x 7/16"-s
2 Pls. 23 x 3/8"-s

L310–L309
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 15/16"-s
2 Pls. 14 x 5/8"-s
Pl. 22 x 5/8"-s

L309–L308
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 15/16"-s
2 Pls. 14 x 5/8"-s
Pl. 22 x 5/8"-s

L308–L307
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 15/16"-s
2 Pls. 14 x 5/8"-s
Pl. 22 x 5/8"-s

L307–L306
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 15/16"-s
2 Pls. 14 x 5/8"-s
Pl. 22 x 5/8"-s

L306–L305
Pl. 22 x 5/8"-s
4 Ls 8 x 6 x 5/8"-s
4 Pls. 30 x 15/16"-s
2 Pls. 14 x 5/8"-s
Pl. 22 x 5/8"-s

L309

L308

L307

L306

Note: See Sh. 57 for diaphragms.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5
TRUSS DETAILS UNIT 3 SOUTH
PANELS 309, 308, 307 AND 306

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/4" = 1'-0"
MADE D.E.P. DATE 7-19-54
TRCD M.A.M. DATE 8-3-54
CKD D.L.C. DATE 10-15-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.55

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

54
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U312

U311

U310

U313 – U312
4 Ls- 8"x6"x 3/4"-s
4 Rs- 30"x 3/4"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 3/8"-s

U312 – U311
4 Ls- 8"x6"x 3/4"-s
4 Rs- 30"x 3/4"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 3/8"-s

U311 – U310
4 Ls- 8"x6"x 3/4"-s
4 Rs- 30"x 3/4"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 3/8"-s

U310 – U309
4 Ls- 8"x6"x 3/4"-s
4 Rs- 30"x 3/4"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 3/8"-s

DIAPHRAGM "A"
1 R- 18"x 1/2"
4 Ls- 8"x 4"x 1/2"
2 Ls- 4"x 4"x 1/2"
2 Ls- 6"x 4"x 1/2"

DIAPHRAGM "B"
1 R- 18"x 1/2"
4 Ls- 4"x 4"x 1/2"
2 fills- 8 1/2"x 7/16"
4 Ls- 6"x 4"x 1/2"

DIAPHRAGM "C"
1 R- 20"x 1/2"
4 Ls- 8"x 4"x 1/2"
4 fills- 16 1/2"x 1/4"
4 Ls- 4"x 4"x 1/2"

DIAPHRAGM "D"
1 R- 20"x 1/2"- Bent
4 Ls- 4"x 4"x 1/2"- Bent
4 fills- 8 1/2"x 7/16"
2 Ls- 4"x 4"x 1/2"

DIAPHRAGM "E"
1 R- 18"x 1/2"- Bent
4 Ls- 4"x 4"x 1/2" Bent
4 fills- 8 1/2"x 1/8"
2 Ls- 6"x 4"x 1/2"

U313 – L312
4 Ls- 4"x 4"x 3/8"-s
2 Rs- 26"x 3/8"-s
2 Rs- 23"x 3/8"-s

U312 – M312 – L312
4 Ls- 4"x 4"x 3/8"-s
4 Ls- 4"x 4"x 7/16"-s (inside) M312-L312 only
2 Rs- 23"x 3/8"
2 Rs- 26"x 7/16"-s

U311 – L311
4 Ls- 4"x 4"x 3/8"-s
2 Rs- 23"x 3/8"-s
2 Rs- 24"x 3/8"-s

U311 – L310
4 Ls- 4"x 4"x 3/8"-s
2 Rs- 24"x 3/8"-s
2 Rs- 23"x 3/8"-s

U310 – L310
4 Ls- 4"x 4"x 3/8"-s
2 Rs- 24"x 3/8"-s
2 Rs- 23"x 3/8"-s

U310 – L309
4 Ls- 4"x 4"x 3/8"-s
2 Rs- 24"x 3/8"
2 Rs- 24"x 3/8"

L313 – L312
4 Ls- 8"x6"x 3/4"-s
4 Rs- 30"x 3/4"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 7/16"-s

L312 – L311
4 Ls- 8"x6"x 7/8"-s
4 Rs- 30"x 3/4"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 7/16"-s

L311 – L310
4 Ls- 8"x6"x 7/8"-s
4 Rs- 30"x 3/4"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 9/16"-s

L310 – L309
4 Ls- 8"x6"x 7/8"-s
4 Rs- 30"x 9/16"-s
1 R- 22"x 5/8"-s
1 R- 22"x 3/4"-s
2 Rs- 14"x 5/8"-s

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17.5
TRUSS DETAILS, UNIT 3 SOUTH
PANELS 312, 311, AND 310
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2"= 1'-0"
MADE DME DATE 7-30-54
TRCD. DATE
CKD. DLC DATE 10-27-54

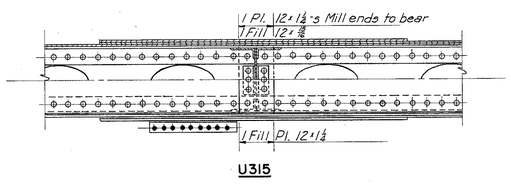
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.54

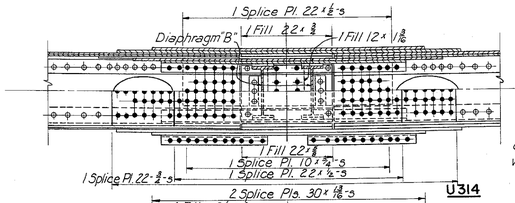
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 ( )	

53
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

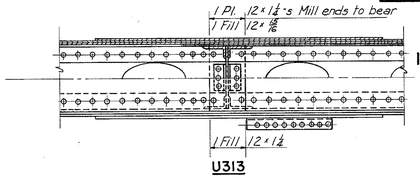


U315

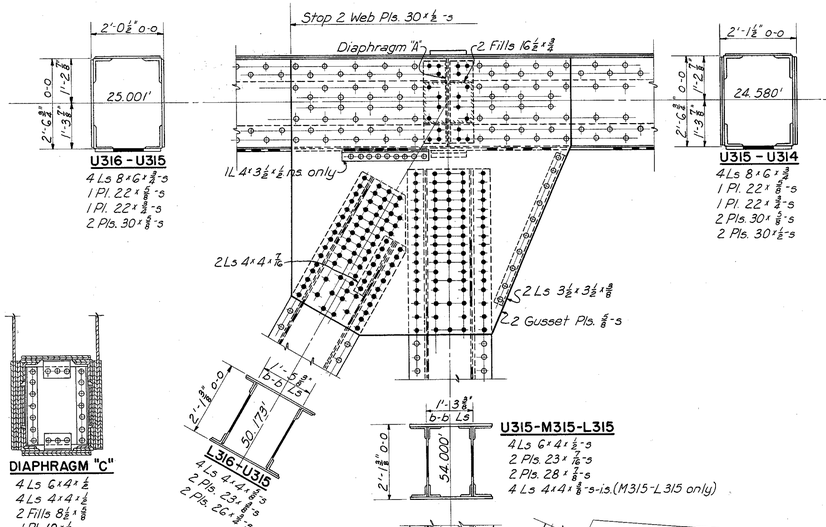


U314

For details and connections of ladder and access walkway, see Sh. 101.

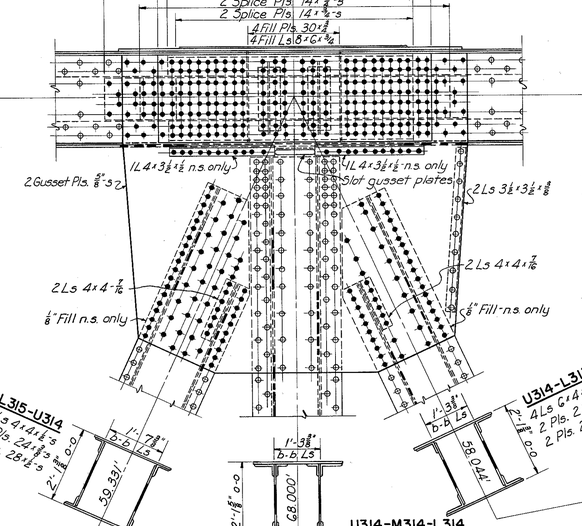


U313

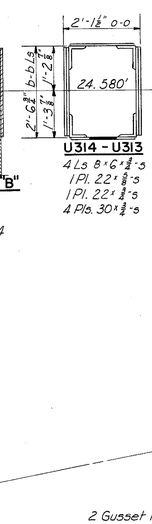


U316 - U315
4 Ls 8 x 6 x ¾-s
1 Pl. 22 x ⅝-s
1 Pl. 22 x ¾-s
2 Pls. 30 x ⅝-s

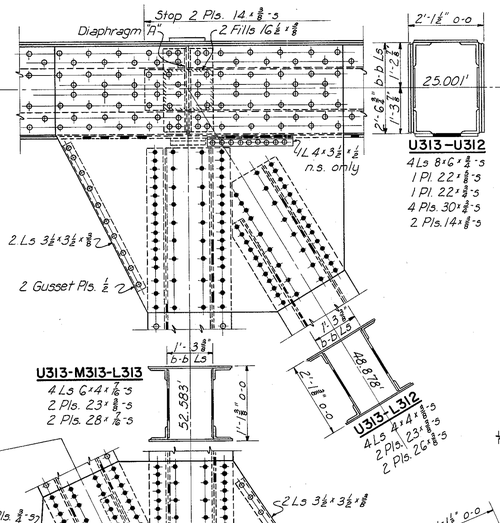
U315 - U314
4 Ls 8 x 6 x ¾-s
1 Pl. 22 x ⅝-s
1 Pl. 22 x ¾-s
2 Pls. 30 x ⅝-s
2 Pls. 30 x ½-s



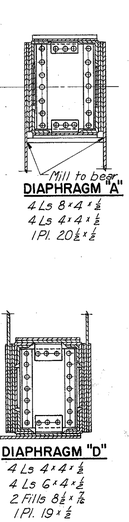
DIAPHRAGM "B"
4 Ls 4 x 4 x ½
2 Fills 14 x ⅜
Pc. 20 I 65.4



U314 - U313
4 Ls 8 x 6 x ¾-s
1 Pl. 22 x ⅝-s
1 Pl. 22 x ¾-s
4 Pls. 30 x ⅝-s

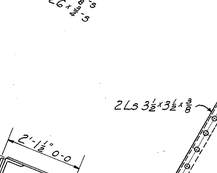


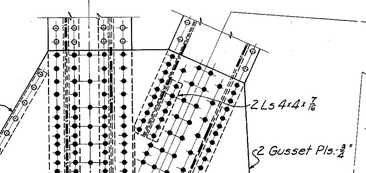
U313 - U312
4 Ls 8 x 6 x ¾-s
1 Pl. 22 x ⅝-s
1 Pl. 22 x ¾-s
4 Pls. 30 x ⅝-s
2 Pls. 14 x ⅝-s



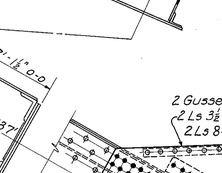
DIAPHRAGM "A"
4 Ls 8 x 4 x ½
4 Ls 4 x 4 x ½
1 Pl. 20½ x ½

DIAPHRAGM "C"
4 Ls 6 x 4 x ½
4 Ls 4 x 4 x ½
2 Fills 8½ x ½
1 Pl. 19 x ½

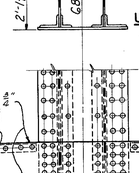




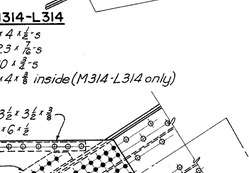
U315-M315-L315
4 Ls 6 x 4 x ½-s
2 Pls. 23 x 7/16-s
2 Pls. 28 x ⅜-s
4 Ls 4 x 4 x ⅞-s-i.s. (M315-L315 only)



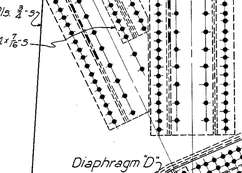
L315-U314
4 Ls 4 x 4 x ½-s
2 Pls. 24 x ⅜-s
2 Pls. 28 x ½-s



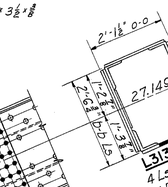
U314-M314-L314
4 Ls 7 x 4 x ½-s
2 Pls. 23 x 7/16-s
2 Pls. 30 x ⅝-s
2 Ls 4 x 4 x ⅞ inside (M314-L314 only)



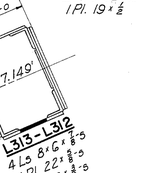
U314-L313
4 Ls 6 x 4 x 7/16-s
2 Pls. 23 x ⅜-s
2 Pls. 28 x 7/16-s



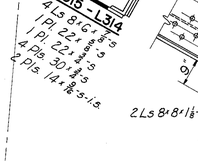
U313-M313-L313
4 Ls 6 x 4 x 7/16-s
2 Pls. 23 x ⅝-s
2 Pls. 28 x 7/16-s



U313-L312
4 Ls 4 x 4 x ½-s
2 Pls. 23 x ⅝-s
2 Pls. 26 x ⅝-s



DIAPHRAGM "D"
4 Ls 4 x 4 x ½
4 Ls 6 x 4 x ½
2 Fills 8½ x 7/16
1 Pl. 19 x ½



L315 - L314
4 Ls 8 x 6 x ½-s
1 Pl. 22 x ⅝-s
1 Pl. 22 x ¾-s
4 Pls. 30 x ⅝-s
2 Pls. 14 x ⅝-s-i.s.

Note:
Fill post with concrete to line marked "conc".
For additional details of connection of strut to Gusset, see Sh. 34.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5
TRUSS DETAILS UNIT 3 - SOUTH
PANELS 315, 314, & 313
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE D.M.E. DATE 6-24-54
TRCD. M.R.F. DATE 12-22-54
CKD. D.L.C. DATE 10-12-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.53

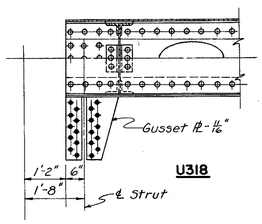
274

MICROFILMED
FEB 15 1983

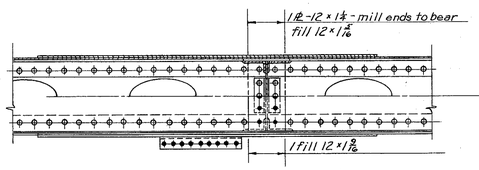
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

52
122

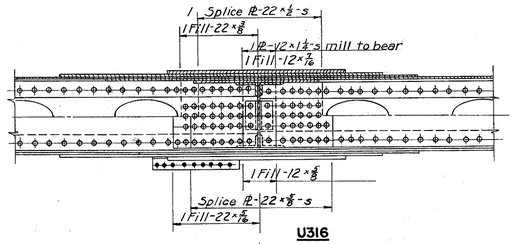
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



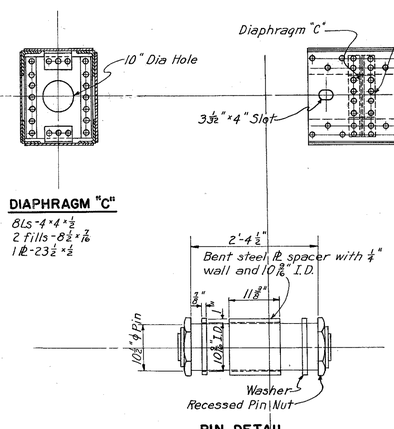
U318



U317

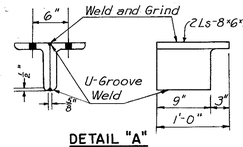


U316

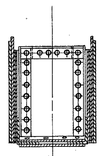


PIN DETAIL
Scale ¾"=1'-0"

Note:
Pin to be a forging with a minimum yield point of 50,000 p.s.i.
Finish pin all over.

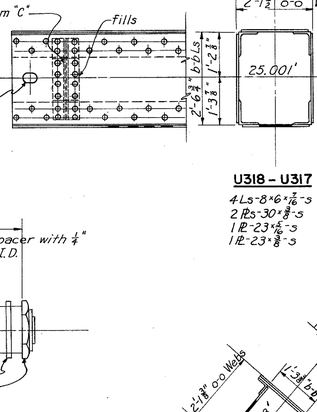


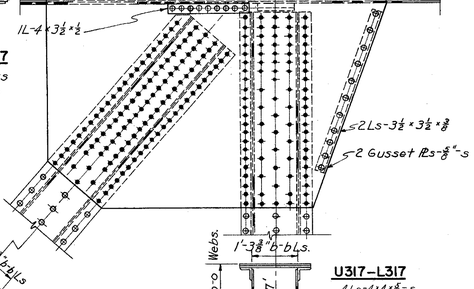
DETAIL "A"
Scale 1"=1'-0"



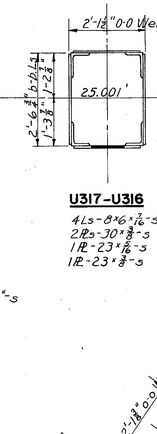
DIAPHRAGM "A"
1PL-22×⅞-bent
3Ls-4"×4"×⅜
2 Fills-4"×⅞
1 Fill-4"×⅜
1 Fill 11"×7/16

DIAPHRAGM "C"
8Ls-4"×4"×½
2 Fills-8½"×7/16
1 PL-23½"×½

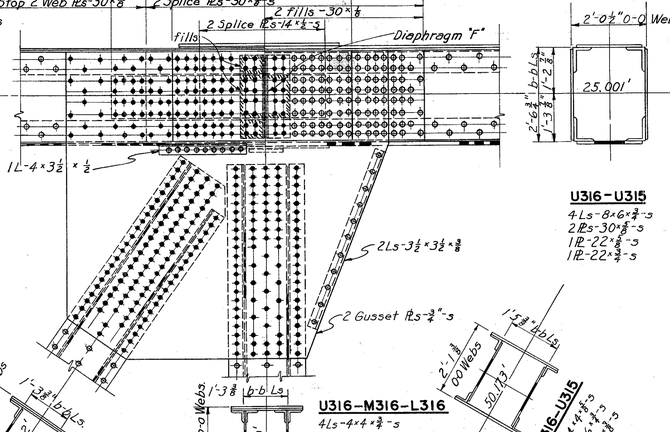




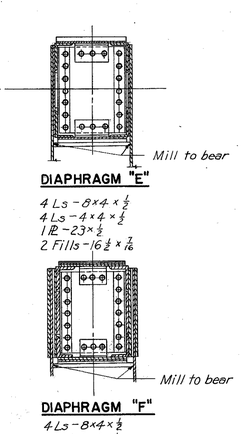
U318 - U317
4Ls-8"×6"×7/16"-s
2PLs-30"×⅜"-s
1PL-23"×7/16"-s
1PL-23"×⅜"-s



U317-U316
4Ls-8"×6"×7/16"-s
2PLs-30"×⅜"-s
1PL-23"×7/16"-s
1PL-23"×⅜"-s

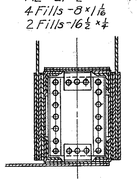


U316-U315
4Ls-8"×6"×¾"-s
2PLs-30"×⅜"-s
1PL-22"×⅝"-s
1PL-22"×¾"-s



DIAPHRAGM "E"
4 Ls-8"×4"×½
4 Ls-4"×4"×½
1 PL-23"×½
2 Fills-16½"×7/16

DIAPHRAGM "F"
4Ls-8"×4"×½
4Ls-4"×4"×½
1PL-21"×½
4 Fills-8"×1/16
2 Fills-16½"×¼



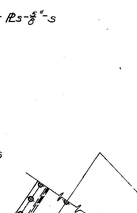
DIAPHRAGM "G"
4Ls-4"×4"×½
4Ls-6"×4"×½
1PL-19"×½
2 Fills-8½"×1

U316-M316-L316
4Ls-4"×4"×⅜"-s
4PLs-26"×⅜"-s
2PLs-23"×7/16"-s
4Ls-4"×4"×⅜"-s i.s. M316-L316 only

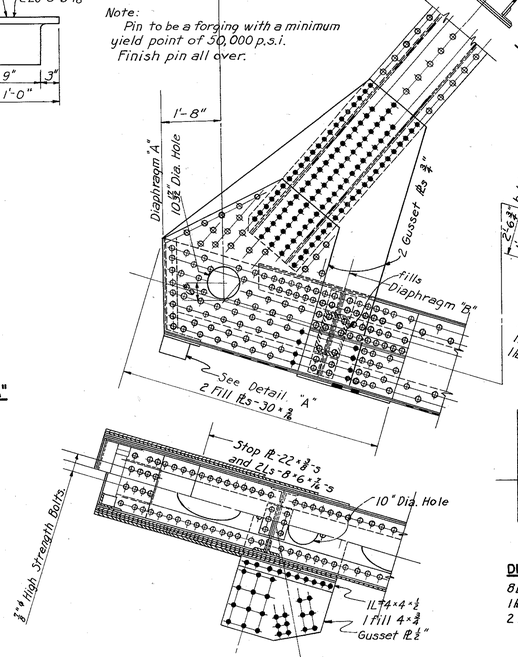
L316-U315
4Ls-4"×4"×⅜
2PLs-26"×⅜
2PLs-23"×7/16

L318-U317
4Ls-4"×4"×⅜"-s
4PLs-24"×⅜"-s
2PLs-22"×⅜"-s

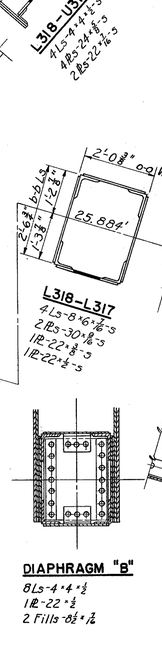
U317-L317
4Ls-4"×4"×⅜"-s
4PLs-24"×½"-s
2PLs-23"×7/16"-s



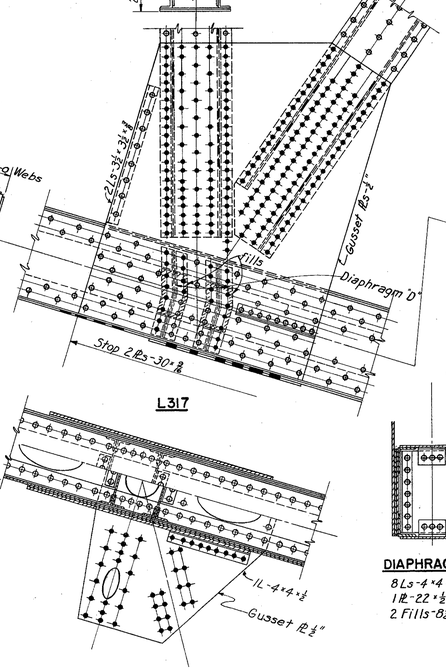
L317-U316
4Ls-4"×4"×⅜"-s
4PLs-24"×⅜"-s
2PLs-23"×⅜"-s



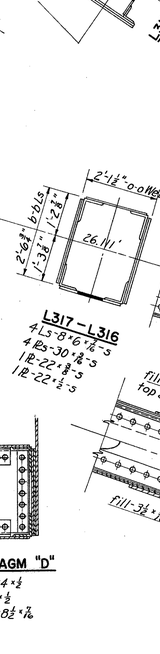
L318



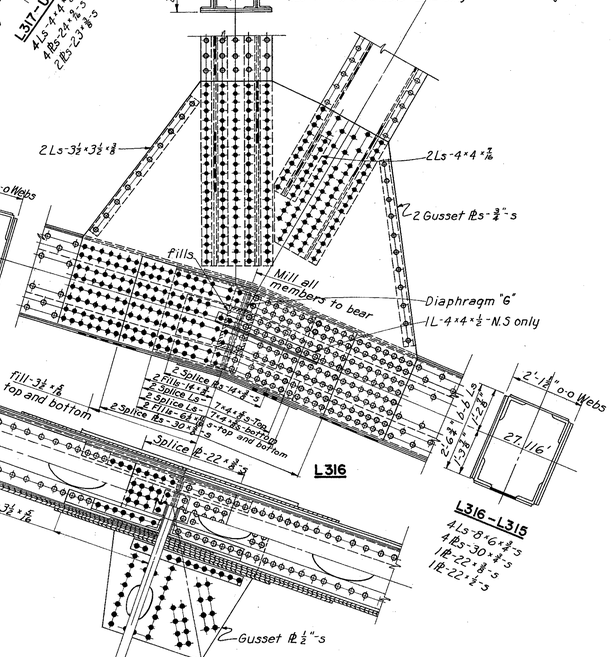
L318-L317
4Ls-8"×6"×7/16"-s
2PLs-30"×⅜"-s
1PL-22"×⅜"-s
1PL-22"×½"-s



L317



L317-L316
4Ls-8"×6"×⅞"-s
4PLs-30"×⅜"-s
1PL-22"×⅜"-s
1PL-22"×½"-s



L316

L316-L315
4Ls-8"×6"×¾"-s
4PLs-30"×⅜"-s
1PL-22"×⅝"-s
1PL-22"×¾"-s

DIAPHRAGM "B"
8Ls-4"×4"×½
1PL-22"×½
2 Fills-8½"×7/16

DIAPHRAGM "D"
8Ls-4"×4"×½
1PL-22"×½
2 Fills-8½"×7/16

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17 5
TRUSS DETAILS, UNIT 3 SOUTH
PANELS 316, 317 AND 318

CLEVELAND CUYAHOGA COUNTY OHIO

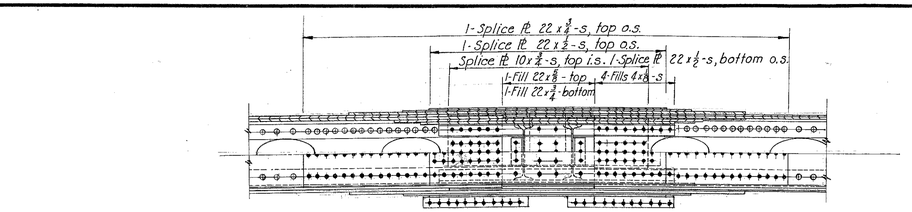
SCALE ¾"=1'-0"
MADE DME DATE 6-2-54
TRCD GJK DATE 1-5-55
CKD DLC DATE 10-7-54

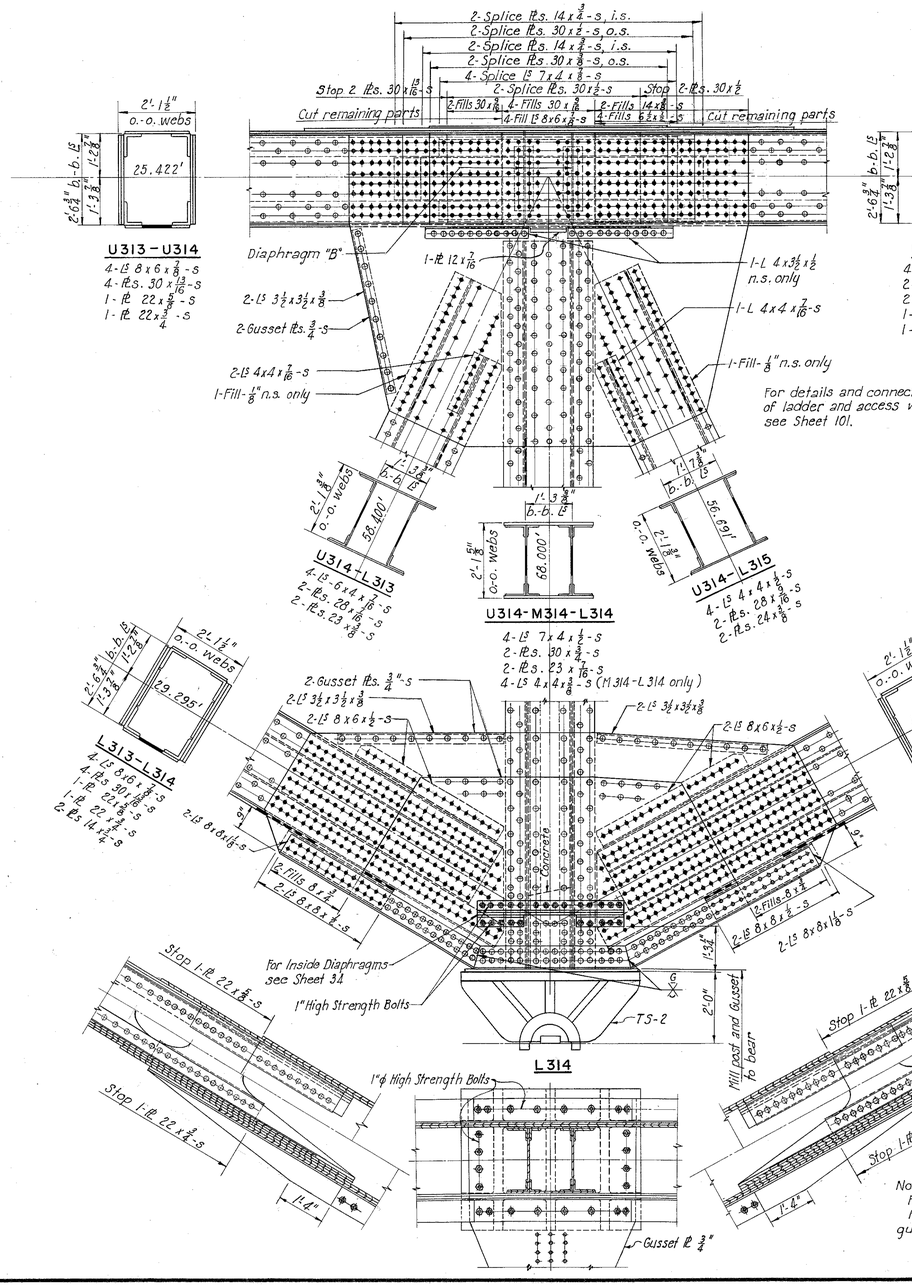
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.52

MICROFILMED
FEB 15 1983

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	51 / 122
2	OHIO			

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT





PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5
TRUSS DETAILS, UNIT 3 NORTH
PANELS 314 AND 318

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE D.M.E. DATE 10-21-54
TRCD D.M.E. & E.E. DATE 11-1-54
CKD. D.L.C. DATE 11-1-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.51

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO	UI 1057 ( )	

50
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U306

U307

U308

U309

U305-U306

U306-U307

U307-U308

U308-U309

U309-U310

L306-M306-U306

L307-U307

L308-U308

L309-U309

U305-L306

U306-L307

U307-L308

U308-L309

L309-U310

L306

L307

L308

L309

L305-L306

L306-L307

L307-L308

L308-L309

L309-L310

PART 3

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO. CU -42 R-17 5

TRUSS DETAILS UNIT 3 - NORTH

PANELS 306 TO 309

CLEVELAND CUYAHOGA COUNTY OHIO

Note :
For detail of diaphragms see Sheet 49.

SCALE 3/8"-1'-0"
MADE DER DATE 7-15-54
TRCD AH DATE 1-19-54
CKD. DATE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

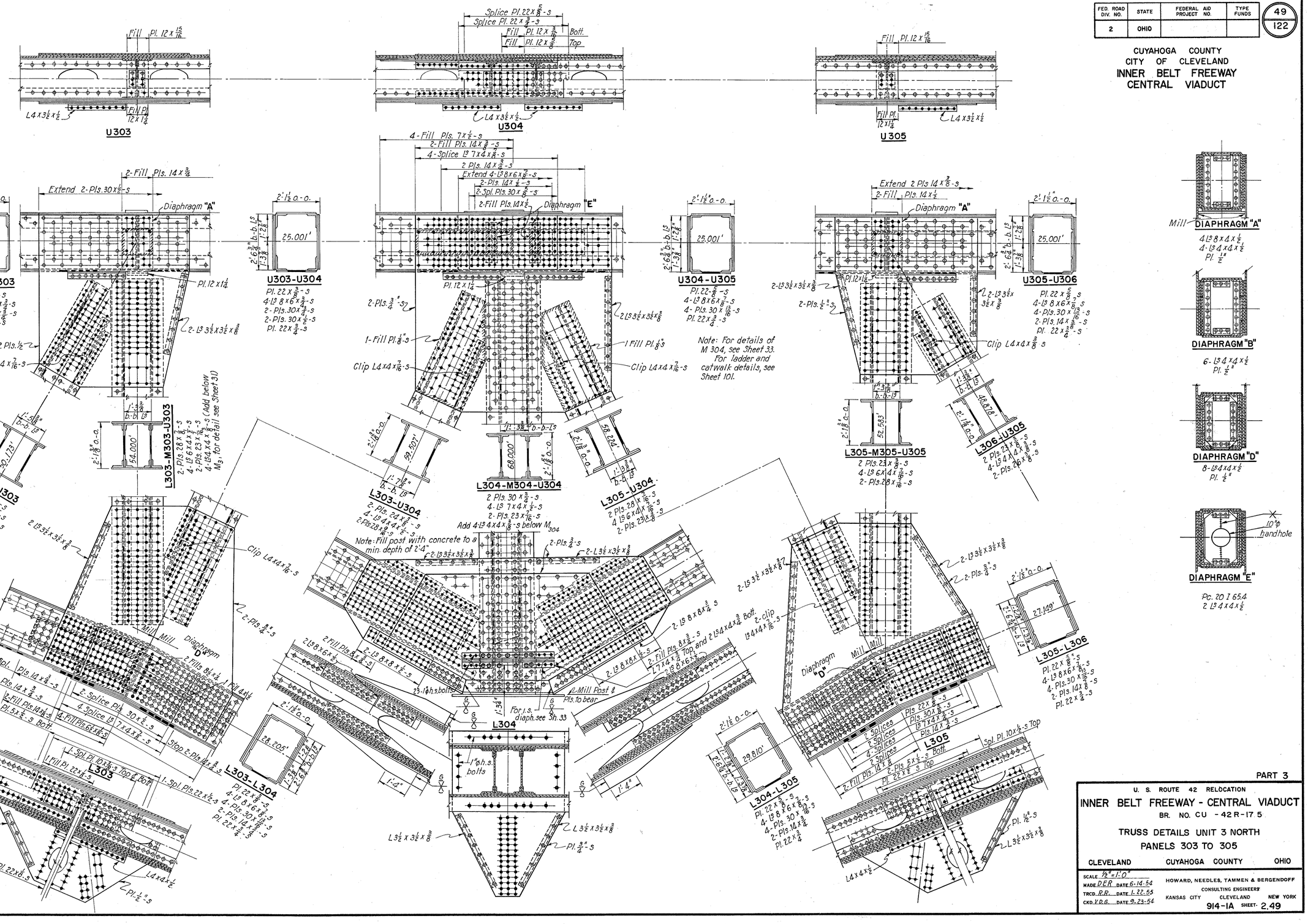
914-1A SHEET- 2.50

MICROFILMED
FEB 15 1983

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

49
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5
TRUSS DETAILS UNIT 3 NORTH
PANELS 303 TO 305
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0"
MADE DER DATE 6-14-54
TRCD R.R. DATE 1-22-55
CKD V.D.G. DATE 9-23-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.49

272

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

48
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

COMPRESSION CHORD

MEMBER	L 300 L 301	L 301 L 302	L 302 L 303	L 303 L 304	L 304 L 305	L 305 L 306	L 306 L 307	L 307 L 308	L 308 L 309	L 309 L 310	L 310 L 311	L 311 L 312	L 312 L 313	L 313 L 314	L 314 L 315	L 315 L 316	L 316 L 317	L 317 L 318
1 Dead Load	- 1016	- 1850	- 2559	- 3088	- 3263	- 3097	- 2951	- 2770	- 2741	- 2691	- 2680	- 2831	- 2959	- 2977	- 2994	- 2440	- 1757	- 947
2 0.8 Dead Load	- 813	- 1480	- 2047	- 2470	- 2610	- 2478	- 2361	- 2216	- 2193	- 2153	- 2144	- 2265	- 2367	- 2382	- 2395	- 1952	- 1406	- 758
3 Live Load + Imp. - Tension																		
4 Reduced L L + Imp. - Tension						+ 158	+ 326	+ 478	+ 607	+ 607	+ 478	+ 326	+ 158					
5 Live Load + Imp.-Compression																		
6 Reduced L L + Imp.-Compression	- 230	- 399	- 526	- 616	- 630	- 679	- 707	- 721	- 781	- 769	- 703	- 678	- 650	- 604	- 590	- 504	- 381	- 220
7 Reduced L.L.+ Imp.-Tension x D (CF)[6]						+ 262	+ 540	+ 792	+ 1006	+ 1006	+ 792	+ 540	+ 262					
8 Reduced L.L.+ Imp.-Compr. x D (CF)[6]	- 381	- 661	- 872	-1021	-1044	- 1125	- 1172	- 1196	- 1294	-1275	- 1165	- 1123	- 1077	- 1001	- 978	- 835	- 631	- 365
9 Ratio= Line 7 (Compr.) or Line 6 (Tension) / Line 8						- 0.05	- 0.11	- 0.17	- 0.22	- 0.23	- 0.18	- 0.12	- 0.05					
10 L L Sidewalk - Tension						+ 8	+ 16	+ 24	+ 31	+ 31	+ 24	+ 16	+ 8					
11 L L Sidewalk - Compression	- 11	- 20	- 28	- 34	- 35	- 42	- 49	- 55	- 62	- 62	- 55	- 49	- 42	- 35	- 34	- 28	- 20	- 11
12 Direct Design Stress	- 1205	- 2161	- 2947	- 3525	- 3689	- 3645	- 3582	- 3467	- 3549	- 3490	- 3364	- 3437	- 3486	- 3418	- 3407	- 2815	- 2057	- 1134
13 Reverse Design Stress																		
14																		
15																		

SECTION	Holes Out for Tension																		
a Angles	2	8x6x 7/16	8x6x 7/16	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/16	8x6x 7/16	8x6x 7/16
b 1. Web Plate	4	30x 9/16	30x 9/16	30x 3/4	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 1	30x 1	30x 1	30x 1	30x 1	30x 9/16	30x 9/16
c Top Plate	3	22x 3/4	22x 3/4	22x 1	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 3/4
d Bottom Plate	2	22x 1/2	22x 1/2	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 3/4**	22x 1/2	22x 1/2	22x 1/2
e 1. Inside Web Plate	2		14x 3/4		14x 3/4	14x 3/4	14x 3/4	14x 3/4	14x 3/4	14x 3/4	14x 3/4	14x 9/16	14x 9/16	14x 9/16	14x 9/16	14x 9/16			
g 2. Outside Web Plate	4		30x 9/16	30x 3/4	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 13/16	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 3/4	30x 9/16		
h 2. Inside Web Plate	2																		
25 Length	In.	315.8"	313.3"	325.4"	338.5"	357.7"	325.8"	305.2"	305.2"	300"	300"	305.2"	305.2"	325.8"	343"	344.8"	325.4"	313.3"	310.6"
26 Min. Radius of Gyration	In.	10.61	10.45	10.90	10.60	10.60	10.60	10.68	10.68	10.68	10.68	10.86	10.86	10.86	10.8	10.8	10.86	10.90	10.61
27 Allowable Stress	Lbs./Sq.In.	19,590	19,590	19,590	19,530	19,480	19,580	19,620	19,620	19,640	19,640	19,630	19,630	19,580	19,540	19,530	19,590	19,620	19,540
28 Actual Gross Area	Sq.In.	71.22	115.47	154.42	187.17	187.17	187.17	183.67	183.67	183.67	183.67	174.42	174.42	174.42	174.42	174.42	144.01	104.97	71.22
29 Net Area	Sq.In.	67.85	115.47	154.42	187.17	187.17	187.17	183.67	183.67	183.67	183.67	174.42	174.42	174.42	174.42	174.42	144.01	104.97	67.85
30 Actual Unit Stress	Lbs./Sq.In.	17,760	18,700	19,090	18,830	19,710 (2.% O.)	19,470	19,500	18,880	19,320	19,023	19,327	19,700	19,980 (2.0% O.)	19,600 (3.3% O.)	19,530	19,550	19,580	16,720
31 Material		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

TENSION CHORD

MEMBER	U 300 U 301	U 301 U 302	U 302 U 303	U 303 U 304	U 304 U 305	U 305 U 306	U 306 U 307	U 307 U 308	U 308 U 309	U 309 U 310	U 310 U 311	U 311 U 312	U 312 U 313	U 313 U 314	U 314 U 315	U 315 U 316	U 316 U 317	U 317 U 318
1 Dead Load		+ 965	+ 1772	+ 2358	+ 2852	+ 2902	+ 2724	+ 2741	+2600	+ 2600	+ 2691	+ 2635	+ 2783	+ 2725	+ 2249	+ 1683	+ 915	
2 0.8 Dead Load		+ 772	+ 1418	+ 1886	+ 2282	+ 2322	+ 2179	+ 2193	+ 2080	+ 2080	+ 2153	+ 2108	+ 2226	+ 2180	+ 1799	+ 1346	+ 732	
3 Live Load + Imp. - Tension																		
4 Reduced L L + Imp. - Tension		+ 219	+ 382	+ 485	+ 625	+ 695	+ 709	+ 781	+ 772	+ 772	+ 768	+ 692	+ 666	+ 599	+ 464	+ 365	+ 209	
5 Live Load + Imp.-Compression																		
6 Reduced L L + Imp.-Compression					- 145	- 321	- 470	- 607	- 622	- 622	- 607	- 470	- 321	- 145				
7 Reduced L L + Imp.-Tens. xD(CF)[6]		+ 363	+ 633	+ 804	+ 1036	+ 1152	+ 1175	+ 1294	+ 1280	+ 1280	+ 1273	+ 1147	+ 1104	+ 993	+ 769	+ 605	+ 346	
8 Reduced L L + Imp.-Comp. xD(CF)					- 240	- 532	- 779	- 1026	- 1031	- 1031	- 1006	- 779	- 532	- 240				
9 Ratio= Line 7 (Comp.) or Line 6 (Tension) / Line 8					- 0.05	- 0.11	- 0.17	- 0.22	- 0.24	- 0.24	- 0.23	- 0.18	- 0.12	- 0.05				
10 L L Sidewalk - Tension		+ 11	+ 19	+ 26	+ 38	+ 48	+ 54	+ 62	+ 62	+ 62	+ 62	+ 54	+ 48	+ 38	+ 26	+ 19	+ 11	
11 L L Sidewalk - Compression					- 7	- 16	- 24	- 31	- 32	- 32	- 31	- 24	- 16	- 7				
12 Direct Design Stress		+ 1146	+ 2070	+ 2716	+ 3356	+ 3522	+ 3408	+ 3549	+ 3422	+ 3422	+ 3488	+ 3309	+ 3378	+ 3211	+ 2594	+ 1970	+ 1089	
13 Reverse Design Stress																		
14																		
15																		

SECTION	Holes Out for Tension																		
a Angles	2	8x6x7/16	8x6x 7/16	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/8	8x6x 7/16
b 1. Web Plate	@	23x 5/16	23x 5/16	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 7/8	23x 5/16	23x 5/16
c Cover Plate	2	23x 3/4*)	23x 3/4*)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 3/4**)	22x 7/16**)
e Inner Angles	2				14x 3/4														
g 2. Web Plate	3				26x 1/2	26x 1/2												24x 1/2	
25 Length	In.	698.7"	586.5"	493.6"	493.6"	586.5"	698.7"	342"	432.4"	448"	392"	392"	392"	522"	522"	648"	648"	816"	816"
26 Min. Radius of Gyration	In.	8.61	7.93	7.70	7.70	7.93	8.61	7.70	7.55	7.70	7.70	7.70	7.70	7.92	7.75	8.47	8.22	8.99	8.69
27 Allowable Stress	Lbs./Sq.In.	16,970	17,480	18,110	18,110	17,480	16,970	14,510	18,490	18,440	18,810	18,810	17,910	17,910	17,140	17,140	15,950	15,950	17,530
28 Actual Gross Area	Sq.In.	50.97	40.69	39.19	39.19	40.69	50.97	39.19	77.82	39.19	39.19	39.19	39.19	85.14	96.58	79.38	90.82	77.38	88.82
29 Net Area	Sq.In.	43.49	32.82	31.33	31.33	32.82	43.49	31.33	77.82	31.33	31.33	31.33	31.33	85.14	96.58	79.38	90.82	77.38	88.82
30 Actual Unit Stress	Lbs./Sq.In.	14,900	14,810	14,870	17,020	15,430	14,680	4,580	18,430	16,220	18,800	5,670	16,950	17,670	17,500	16,860	16,890	15,430	15,560
31 Material		S	S	S	S	S	S	C	S	S	S	C	S	S	S	S	S	S	S

COMPRESSION WEB MEMBERS

MEMBER	U 304 L 305	U 305 L 306	U 307 L 308	L 310 U 311	L 312 U 313	L 313 U 314	U 300 L 300	U 301 L 301	U 307 L 307	U 308 L 308	U 309 L 309	U 310 L 310	U 302 M 302	M 302 L 302	U 303 M 303	M 303 L 303	U 304 M 304	M 304 L 304
1 Dead Load	- 267	- 98	- 26	- 89	- 114	- 255	- 87	- 1230	- 121	- 316	- 127	- 250	- 1302	- 1445	- 1372	- 1316	- 740	- 893
2 0.8 Dead Load	- 214	- 78	- 21	- 71	- 91	- 204	- 70	- 984	- 97	- 253	- 102	- 200	- 1042	- 1156	- 938	- 1316	- 592	- 714
3 Live Load + Imp. - Tension																		
4 Reduced L L + Imp. - Tension	+ 338	+ 356	+ 285	+ 285	+ 356	+ 338			+ 192	+ 153		+ 159					+ 172	+ 175
5 Live Load + Imp.-Compression																		
6 Reduced L L + Imp.-Compression	- 250	- 235	- 259	- 269	- 239	- 249	- 45	- 264	- 241	- 195	- 47	- 192	- 271	- 313	- 235	- 281	- 351	- 390
7 Reduced L L + Imp.-Tens. xD(CF)[6]	+ 560	+ 590	+ 472	+ 472	+ 590	+ 560			+ 318	+ 253		+ 263					+ 290	+ 290
8 Reduced L L + Imp.-Comp. xD(CF)	- 414	- 389	- 429	- 446	- 396	- 413	- 75	- 437	- 399	- 323	- 78	- 318	- 449	- 519	- 389	- 466	- 582	- 646
9 Ratio= Line 7 (Comp.) or Line 6 (Tension) / Line 8	- 1.265	- 3.64	- 10.95	- 3.20	- 3.12	- 1.325			- 1.586	- 0.48		- 0.64					- 0.23	- 0.19
10 L L Sidewalk - Tension	+ 17	+ 17	+ 13	+ 13	+ 17	+ 17			+ 11	+ 10		+ 10					+ 13	+ 13
11 L L Sidewalk - Compression	- 20	- 19	- 16	- 16	- 19	- 20	- 1	- 13	- 12	- 13	- 1	- 13	- 14	- 16	- 12	- 14	- 20	- 22
12 Direct Design Stress	- 648	- 486	- 466	- 533	- 506	- 607	- 146	- 1434	- 508	- 589	- 181	- 531	- 1505	- 1691	- 1339	- 1533	- 1198	- 1382
13 Reverse Design Stress	+ 151	+ 529	+ 464	+ 414	+ 516	+ 177			+ 164									
14																		
15																		

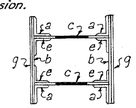
SECTION	Holes Out for Tension																		
a Outer Angles	2	6x4x 7/16	4x4x 3/4	4x4x 3/4	4x4x 3/4	4x4x 3/4	6x4x 7/16	4x4x 3/4	4x4x 3/4	4x4x 3/4	4x4x 3/4	4x4x 3/4	4x4x 3/4	4x4x 3/4	6x4x 1/2	6x4x 1/2	7x4x 1/2	7x4x 1/2	5x4x 7/16
b 1. Web Plate	@	28x 7/16	26x 3/4	24x 3/4	24x 3/4	26x 3/4	28x 7/16	24x 3/4	24x 1/4	24x 3/4	24x 3/4	24x 3/4	24x 3/4	26x 1/2	26x 1/2	28x 1/2	30x 3/4	30x 3/4	28x 7/16
c Cover Plate	2	23x 3/4**)	23x 3/4**)	23x 3/4**)	23x 3/4**)	23x 3/4**)	23x 3/4**)	23x 3/4**)	23x 7/16**)	23x 3/4**)	23x 3/4**)	23x 3/4**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)	23x 7/16**)
e Inner Angles	2								4x4x 3/4						4x4x 3/4				
g 2. Web Plate	3							24x 1/2					26x 1/2	26x 1/2					
25 Length	In.	698.7"	586.5"	493.6"	493.6"	586.5"	698.7"	342"	432.4"	448"	392"	392"	392"	522"	522"	648"	648"	816"	816"
26 Min. Radius of Gyration	In.	8.61	7.93	7.70	7.70	7.93	8.61	7.70	7.55	7.70	7.70	7.70	7.70	7.92	7.75	8.47	8.22	8.99	8.69
27 Allowable Stress	Lbs./Sq.In.	16,970	17,480	18,110	18,110	17,480	16,970	14,510	18,490	18,440	18,810	18,810	17,910	17,910	17,140	17,140	15,950	15,950	17,530
28 Actual Gross Area	Sq.In.	50.97	40.69	39.19	39.19	40.69	50.97	39.19	77.82	39.19	39.19	39.19	39.19	85.14	96.58	79.38	90.82	77.38	88.82
29 Net Area	Sq.In.	43.49	32.82	31.33	31.33	32.82	43.49	31.33	77.82	31.33	31.33	31.33	31.33	85.14	96.58	79.38	90.82	77.38	88.82
30 Actual Unit Stress	Lbs./Sq.In.	14,900	14,810	14,870	17,020	15,430	14,680	4,580	18,430	16,220	18,800	5,670	16,950	17,670	17,500	16,860	16,890	15,430	15,560
31 Material		S	S	S	S	S	S	C	S	S	S	C	S	S	S	S	S	S	S

TENSION WEB MEMBERS

MEMBER	L 300 U 301	L 301 U 302	L 302 U 303	L 303 U 304	L 306 U 307	U 308 L 309	L 309 U 310	L 311 U 312	U 314 L 315	L 315 U 316	L 316 U 317	L 317 U 318
1 Dead Load	+ 1468	+ 1416	+ 1173	+ 903	+ 318	+ 232	+ 149	+ 264	+ 886	+ 1134	+ 1351	+ 1390
2 0.8 Dead Load	+ 1174	+ 1133	+ 938	+ 722	+ 254	+ 186	+ 119	+ 211	+ 709	+ 907	+ 1081	+ 1112
3 Live Load + Imp.-Tension												
4 Reduced L L + Imp.-Tension	+ 337	+ 313	+ 255	+ 192	+ 307	+ 245	+ 240	+ 307	+ 187	+ 246	+ 300	+ 318
5 Live Load + Imp.-Compression												
6 Reduced L L + Imp.-Compression					- 206	- 218	- 224	- 215				
7 Reduced L L + Imp.-Tens. xD(CF)[6]	+ 558	+ 519	+ 423	+ 318	+ 509	+ 406	+ 398	+ 509	+ 310	+ 409	+ 497	+ 527
8 Reduced L L + Imp.-Comp. xD(CF)					- 341	- 361	- 371	- 356				
9 Ratio= Line 7 (Comp.) or Line 6 (Tension) / Line 8					- 0.65	- 0.94	- 1.50	- 0.81				
10 L L Sidewalk-Tension	+ 16	+ 15	+ 13	+ 9	+ 15	+ 16	+ 16	+ 15	+ 9	+ 13	+ 15	+ 18
11 L L Sidewalk-Compression					- 12	- 14	- 14	- 12				
12 Direct Design Stress	+ 1748	+ 1667	+ 1374	+1049	+ 778	+ 608	+ 533	+ 735	+ 1028	+ 1329	+ 1593	+ 1657
13 Reverse Design Stress					- 171							
14												
15												

SECTION	Holes Out for Tension												
a Outer Angles	2	4x4x 1/4	4x4x 3/8	4x4x 3/8	4x4x 1/4	4x4x 3/4	4x4x 3/4	4x4x 3/4	4x4x 3/4	4x4x 1/4	4x4x 3/8	4x4x 3/8	4x4x 1/4
b 1. Web Plate	@	24x 3/8	24x 9/16	26x 13/16	28x 1/4	24x 3/4	24x 3/4	24x 3/4	28x 1/4	26x 13/16	24x 9/16	24x 3/8	
c Cover Plate	2	22x 3/4**)	23x 1/2**)	23x 3/4**)	24x 3/4**)	23x 1/2**)	24x 3/4**)	24x 3/4**)	23x 1/2**)	23x 3/4**)	23x 7/16**)	22x 7/16**)	
e Inner Angles	2												
g 2. Web Plate	3	24x 3/8	24x 9/16									24x 3/16	24x 3/8

WEB MEMBER



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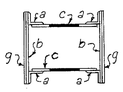
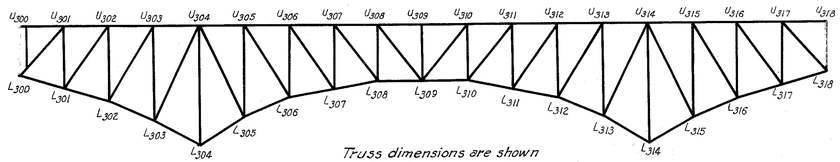
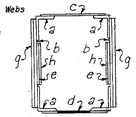




Truss dimensions are shown on Framing Plan, Sh. 20.

NOTE

*) Handhole 11" Wide
**) Handhole 10" Wide
S= Special Steel
C= Carbon Steel
@ 3 Holes Out of 24" Webs
4 Holes Out of 26" And 28" Webs



CHORD

All dead load and live load stresses are in kips.
Line 29,- Net area for tension or effective gross area for compression.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5
STRESS SHEET UNIT 3
SOUTH TRUSS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE H.W.L. DATE 5-3-54
TRCD. [illegible] DATE 6-21-54
CKD. R.L. DATE 9-2-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2-48

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	
2	OHIO			47 / 122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

COMPRESSION CHORD

Line	Member	Holes out for Tension	L300 L301	L301 L302	L302 L303	L303 L304	L304 L305	L305 L306	L306 L307	L307 L308	L308 L309	L309 L310	L310 L311	L311 L312	L312 L313	L313 L314	L314 L315	L315 L316	L316 L317	L317 L318
1	Dead Load		-1,016	-1,851	-2,560	-3,086	-3,260	-3,119	-3,006	-2,864	-2,884	-2,912	-2,912	-3,070	-3,193	-3,235	-3,255	-2,611	-1,888	-1,021
2	0.8 Dead Load		-813	-1,481	-2,048	-2,469	-2,608	-2,495	-2,405	-2,291	-2,307	-2,330	-2,330	-2,458	-2,554	-2,588	-2,604	-2,089	-1,510	-817
3	Live Load + Imp. - Tension																			
4	Reduced L.L. + Imp. - Tension							+158	+326	+478	+607	+607	+478	+326	+158					
5	Live Load + Imp. - Compression																			
6	Reduced L.L. + Imp. - Compr.		-230	-399	-526	-616	-630	-679	-707	-733	-800	-813	-749	-735	-706	-655	-640	-548	-416	-241
7	Red. L.L. + Imp. - Tension × D(CF)e							+262	+540	+792	+1,006	+1,006	+792	+540	+262					
8	Red. L.L. + Imp. - Compr. × D(CF)e		-381	-661	-871	-1,021	-1,044	-1,125	-1,172	-1,215	-1,326	-1,347	-1,242	-1,218	-1,170	-1,085	-1,061	-909	-690	-399
9	Ratio = Line 4 / Line 1 (Compr.) or Line 6 / Line 1 (Tens.)							-0.05	-0.11	-0.17	-0.21	-0.21	-0.16	-0.11	-0.05					
10	L.L. Sidewalk - Tension							+8	+16	+24	+31	+31	+24	+16	+8					
11	L.L. Sidewalk - Compression		-11	-20	-28	-34	-35	-42	-49	-55	-62	-62	-55	-49	-42	-35	-34	-28	-20	-11
12	Direct Design Stress ②+⑦+⑩ or ②+⑧+⑪		-1,205	-2,162	-2,947	-3,524	-3,687	-3,662	-3,626	-3,561	-3,695	-3,739	-3,627	-3,723	-3,766	-3,708	-3,699	-3,026	-2,220	-1,227
13	Reverse Design Stress																			
14																				
15																				
	Section	Holes out for Tension																		
	a Angles	2	8x6x7/16	8x6x7/16	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/16	8x6x7/16
	b First Web Plate	4	30x9/16	30x9/16	30x3/4	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x3/4	30x9/16	30x9/16
	c Top Plate	3	22x3/8	22x3/8	22x1/2	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x1/2	22x3/8	22x3/8
	d Bottom Plate	2	22x1/2**	22x1/2**	22x5/8*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x5/8*	22x1/2**	22x1/2**
	e Inside Web Plate	2		14x3/8		14x3/4	14x3/4	14x7/8	14x3/4	14x5/8	14x3/4	14x3/4	14x5/8	14x3/4	14x7/8	14x3/4	14x3/4		14x3/8	
	f Inside Web Plate	4																		
	g 2.Outside Web Plate	4		30x9/16	30x3/4	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x3/4	30x9/16	
	h Inside Web Plate	2																		
25	Length In.		315.8"	313.3"	325.4"	353.7"	357.7"	325.8"	305.2	305.2	300.0"	300.0"	305.2"	305.2"	325.8"	357.7"	353.7"	325.4"	313.3"	315.8"
26	Min. Radius of Gyration In.		10.61	10.45	10.90	10.80	10.80	10.51	10.60	10.68	10.60	10.60	10.68	10.60	10.51	10.80	10.80	10.90	10.45	10.61
27	Allowable Stress Lbs./Sq. In.		19,590	19,590	19,590	19,490	19,480	19,560	19,620	19,620	19,630	19,630	19,620	19,620	19,560	19,480	19,490	19,590	19,590	19,590
28	Actual Gross Area Sq. In.		71.22	115.47	154.42	187.17	187.17	190.67	187.17	183.67	187.17	187.17	183.67	187.17	190.67	187.17	187.17	154.42	115.47	71.22
29	Net Area Sq. In.		67.85	115.47	154.42	187.17	187.17	190.67	187.17	183.67	187.17	187.17	183.67	187.17	190.67	187.17	187.17	154.42	115.47	67.85
30	Actual Unit Stress - Lbs./Sq. In.		17,760	18,725	19,060	18,830	19,700	19,210	19,370	19,400	19,770	19,980 (1.8%o.)	19,750 (0.7%o.)	19,890 (1.4%o.)	19,750 (1.0%o.)	19,810 (1.7%o.)	19,760 (1.4%o.)	19,590	19,230	18,080
31	Material		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

TENSION CHORD

Line	Member	U300 U301	U301 U302	U302 U303	U303 U304	U304 U305	U305 U306	U306 U307	U307 U308	U308 U309	U309 U310	U310 U311	U311 U312	U312 U313	U313 U314	U314 U315	U315 U316	U316 U317	U317 U318
1	Dead Load		+965	+1,773	+2,359	+2,872	+2,956	+2,817	+2,884	+2,782	+2,782	+2,912	+2,864	+3,019	+2,941	+2,407	+1,808	+986	
2	0.8 Dead Load		+772	+1,418	+1,887	+2,298	+2,365	+2,254	+2,307	+2,226	+2,226	+2,330	+2,291	+2,415	+2,353	+1,926	+1,446	+789	
3	Live Load + Imp. - Tension																		
4	Reduced L.L. + Imp. - Tension		+219	+382	+485	+625	+695	+721	+800	+803	+803	+812	+737	+723	+650	+505	+399	+229	
5	Live Load + Imp. - Compression																		
6	Reduced L.L. + Imp. - Compr.					-145	-321	-470	-607	-622	-622	-607	-470	-321	-145				
7	Red. L.L. + Imp. - Tension × D(CF)e		+363	+633	+804	+1,036	+1,152	+1,195	+1,326	+1,331	+1,331	+1,346	+1,221	+1,198	+1,077	+837	+661	+380	
8	Red. L.L. + Imp. - Compr. × D(CF)e					-240	-532	-779	-1,006	-1,031	-1,031	-1,006	-779	-532	-240				
9	Ratio					-0.05	-0.11	-0.17	-0.21	-0.22	-0.22	-0.21	-0.16	-0.11	-0.05				
10	L.L. Sidewalk - Tension		+11	+19	+26	+38	+48	+54	+62	+62	+62	+62	+54	+48	+38	+26	+19	+11	
11	L.L. Sidewalk - Compression					-7	-16	-24	-31	-32	-32	-31	-24	-16	-7				
12	Direct Design Stress		+1,146	+2,070	+2,717	+3,372	+3,565	+3,503	+3,695	+3,619	+3,619	+3,738	+3,566	+3,661	+3,468	+2,789	+2,126	+1,180	
13	Reverse Design Stress																		
14																			
15																			
	a Angles	8x6x7/16	8x6x7/16	8x6x3/4	8x6x3/4	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x7/8	8x6x3/4	8x6x3/4	8x6x7/16	8x6x7/16
	b First Web Plate	30x3/8	30x3/8	30x3/4	30x3/4	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x3/4	30x3/4	30x3/8	30x3/8
	c Top Plate	23x5/16	23x5/16	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	22x5/8	23x5/16	23x5/16
	d Bottom Plate	23x3/8**	23x3/8**	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	22x3/4*	23x3/8**	23x3/8**
	e Inside Web Plate						14x3/8	14x3/8	14x1/2	14x3/8	14x3/8	14x1/2	14x3/8	14x3/8					
	f Inside Web Plate																		
	g 2.Outside Web Plate				30x1/2	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x13/16	30x1/2			
	h Inside Web Plate																		
25	Length In.																		
26	Min. Radius of Gyration In.																		
27	Allowable Stress Lbs./Sq. In.	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
28	Actual Gross Area Sq. In.	57.91	57.91	107.51	137.51	166.17	176.67	176.67	180.17	176.67	176.67	180.17	176.67	176.67	166.17	137.51	107.51	57.91	57.91
29	Net Area Sq. In.	49.72	49.72	92.14	118.14	142.80	151.80	151.80	154.80	151.80	151.80	154.80	151.80	151.80	142.80	118.14	92.14	49.72	49.72
30	Actual Unit Stress - Lbs./Sq. In.		23,100	22,470	23,000	23,610	23,480	23,080	23,870	23,840	23,840	24,150 (0.6%o.)	23,500	24,120 (0.5%o.)	24,290 (1.2%o.)	23,610	23,070	23,730	
31	Material	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

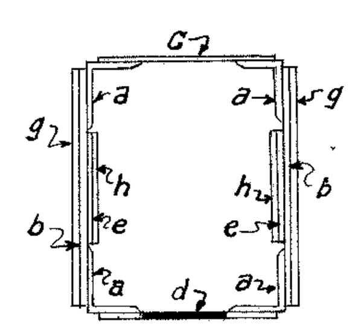
COMPRESSION WEB MEMBERS

Line	Member	U304 L305	U305 L306	U307 L308	L310 U311	L312 U313	L313 U314	U300 L300	U301 L301	U307 L307	U308 L308	U309 L309	U310 L310	U302 M302	M302 L302	U303 M303	M303 L303	U304 M304
1	Dead Load	-318	-163	-109	-76	-154	-306	-87	-1,231	-56	-267	-128	-302	-1,303	-1,446	-1,173	-1,317	-686
2	0.8 Dead Load	-254	-130	-87	-61	-123	-245	-70	-985	-45	-214	-102	-242	-1,042	-1,157	-938	-1,054	-549
3	Live Load + Imp. - Tension																	
4	Reduced L.L. + Imp. - Tension	+338	+356	+285	+285	+356	+338			+209	+165		+159					+184
5	Live Load + Imp. - Compr.																	
6	Reduced L.L. + Imp. - Compr.	-259	-248	-279	-270	-245	-260	-45	-264	-241	-195	-47	-199	-271	-313	-235	-281	-351
7	Red. L.L. + Imp. - Tension × D(CF)e	+560	+590	+472	+472	+590	+560			+346	+273		+263					+305
8	Red. L.L. + Imp. - Compr. × D(CF)e	-429	-411	-462	-447	-406	-430	-75	-437	-399	-323	-78	-330	-449	-519	-389	-466	-582
9	Ratio	-1.06	-2.18	-2.62	-3.75	-2.31	-1.105			-3.74	-0.618		-0.526					-0.265
10	L.L. Sidewalk - Tension	+17	+17	+13	+13	+17	+17			+11	+10		+10					+13
11	L.L. Sidewalk - Compression	-20	-19	-16	-16	-19	-20	-1	-13	-12	-13	-1	-13	-14	-16	-12	-14	-20
12	Direct Design Stress	-703	-560	-565	-524	-548	-695	-146	-1,435	-456	-550	-181	-585	-1,505	-1,692	-1339	-1534	-1,151
13	Reverse Design Stress	+51	+477	+398	+424	+484	+73			+312								
14																		
15																		
	a Outer Angles	6x4x7/16	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	6x4x7/16	4x4x3/8	4x4x3/4	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/4	4x4x3/4	6x4x1/2	6x4x1/2	7x4x1/2
	b 1. Web Plate	28x7/16	26x3/8	24x3/8	24x3/8	26x3/8	28x7/16	24x3/8	24x1/2	24x3/8	24x3/8	24x3/8	24x3/8	26x1/2	26x1/2	28x7/8	28x7/8	30x3/4
	c Cover Plate	23x3/8*	23x3/8*	23x3/8*	23x3/8*	23x3/8*	23x3/8*	23x3/8*	23x7/16*	23x3/8*	23x3/8*	23x3/8*	23x3/8*	23x7/16*	23x7/16*	23x7/16*	23x7/16*	23x7/16*
	d																	
	e Inner Angles														4x4x3/8		4x4x3/8	
	f																	
	g 2. Web Plate								24x1/2					26x1/2	26x1/2			
	h																	
25	Length In.	700.8"	586.5"	493.6"	493.6"	586.5"	700.8	342"	432.4"	448"	392"	392"	392"	522"	522"	648"	648"	816"
26	Min. Radius of Gyration In.	8.61	7.93	7.70	7.70	7.93	8.61	7.70	7.63	7.70	7.70	7.70	7.70	7.92	7.75	8.47	8.22	8.99
27	Allowable Stress - Lbs./Sq. In.	16,960	17,480	18,110	18,110	17,480	16,960	14,510	18,520	18,440	18,810	14,350	18,810	18,000	18,000	17,310	17,310	15,950
28	Actual Gross Area Sq. In.	50.97	40.69	39.19	39.19	40.69	50.97	39.19	81.14	39.19	39.19	39.19	39.19	85.14	96.58	79.38	90.82	77.38
29	Net Area Sq. In.	43.49	32.82	31.33	31.33	32.82	43.49	31.33	81.14	31.33	31.33	31.33	31.33	85.14	96.58	79.38	90.82	77.38
30	Actual Unit Stress - Lbs./Sq. In.	16,160	17,070	18,030	16,730	16,700	16,020	4570	17,680	14,550	17,600	5,670	18,660	17,680	17,520	16,850	16,930	14,870
31	Material	S	S	S	S	S	S	C	S	S	S	C	S	S	S	S	S	S

Line	Member	M304 L304	U305 M305	M305 L305	U306 M306	M306 L306	U312 M312	M312 L312	U313 M313	M313 L313	U314 M314	M314 L314	U315 M315	M315 L315	U316 M316	M316 L316	U311 L311	U317 L317
1	Dead Load	-839	-1	-145	-346	-489	-371	-514	-11	-155	-742	-821	-1,198	-1,342	-1,327	-1,469	-83	-1,260
2	0.8 Dead Load	-670	-1	-116	-277	-391	-297	-411	-9	-124	-594	-657	-958	-1,074	-1,062	-1,175	-66	-1,008
3	Live Load + Imp. - Tension																	
4	Reduced L.L. + Imp. - Tension	+184	+212	+212	+185	+185	+178	+178	+209	+209	+173						+199	
5	Live Load + Imp. - Compr.																	
6	Reduced L.L. + Imp. - Compr.	-390	-323	-365	-269	-313	-269	-313	-323	-365	-352	-389	-241	-291	-280	-325	-241	-275
7	Red. L.L. + Imp. - Tension × D(CF)e	+305	+351	+351	+307	+307	+295	+295	+346	+346	+287						+330	
8	Red. L.L. + Imp. - Compr. × D(CF)e	-646	-535	-605	-446	-519	-446	-519	-535	-605	-583	-644	-399	-482	-464	-539	-399	-456
9	Ratio	-0.22	+2.12	-1.46	-0.535	-0.38	-0.48	-0.35	-19.0	-1.35	-0.24						-2.40	
10	L.L. Sidewalk - Tension	+13	+16	+16	+10	+10	+10	+10	+16	+16	+13						+11	
11	L.L. Sidewalk - Compression	-22	-16	-18	-14	-16	-14	-16	-16	-18	-20	-22	-12	-14	-14	-16	-12	-13
12	Direct Design Stress	-1,338	-552	-739	-737	-926	-757	-946	-560	-747	-1,197	-1,323	-1,369	-1,570	-1,540	-1,730	-477	-1,477
13	Reverse Design Stress		+366	+153					+353	+122							+275	
14																		
15																		
	a Outer Angles	7x4x1/2	6x4x7/16	6x4x7/16	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	6x4x7/16	6x4x7/16	7x4x1/2	7x4x1/2	6x4x1/2	6x4x1/2	4x4x3/4	4x4x3/4	4x4x3/8	4x4x3/4
	b 1. Web Plate	30x3/4	28x7/16	28x7/16	26x1/2	26x1/2	26x1/2	26x1/2	28x7/16	28x7/16	30x3/4	30x3/4	28x7/8	28x7/8	26x1/2	26x1/2	24x3/8	24x1/2
	c Cover Plate	23x7/16*	23x3/8*	23x3/8*	24x3/8*	24x3/8*	24x3/8*	24x3/8*	23x3/8*	23x3/8*	23x7/16*	23x7/16*	23x7/16*	23x7/16*	23x7/16*	23x7/16*	23x3/8*	23x7/16*
	d																	
	e Inner Angles	4x4x3/8				4x4x3/8		4x4x3/8				4x4x3/8		4x4x3/8		4x4x3/8		
	f																	
	g 2. Web Plate														26x1/2	26x1/2		24x1/2
	h																	
25	Length In.	816"	631"	631"	504"	504"	504"	504"	631"	631"	816"	816"	648"	648"	522"	522"	448"	432.4"
26	Min. Radius of Gyration In.	8.69	8.61	8.61	7.86	7.58	7.86	7.58	8.61	8.61	8.99	8.69	8.47	8.22	7.92	7.75	7.70	7.63
27	Allowable Stress - Lbs./Sq. In.	15,950	17,530	17,530	18,110	18,110	18,110	18,110	17,530	17,530	15,950	15,950	17,310	17,310	18,000	18,000	18,440	18,520
28	Actual Gross Area Sq. In.	88.82	50.97	50.97	47.94	59.38	47.94	59.38	50.97	50.97	77.38	88.82	79.38	90.82	85.14	96.58	39.19	81.14
29	Net Area Sq. In.	88.82	43.49	43.49	41.27	59.38	41.27	59.38	43.49	43.49	77.38	88.82	79.38	90.82	85.14	96.58	31.33	81.14
30	Actual Unit Stress - Lbs./Sq. In.	15,070	12,680	16,990	17,860	15,590	18,340 (1.3%o.)	15,950	12,870	17,170	15,470	14,900	17,250	17,290	18,080 (0.5%o.)	17,920	16,220	18,200
31	Material	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

TENSION WEB MEMBERS

Line	Member	Holes out for Tension	L300 U301	L301 U302	L302 U303	L303 U304	U306 L307	U308 L309	L309 U310	L311 U312	U314 L315	U315 L316	U316 L317	U317 L318
1	Dead Load		+1,468	+1,417	+1,177	+895	+248	+169	+214	+278	+943	+1,201	+1,440	+1,497
2	0.8 Dead Load		+1,174	+1,134	+942	+716	+198	+135	+171	+222	+754	+961	+1,152	+1,198
3	Live Load + Imp. - Tension													
4	Reduced L.L. + Imp. - Tension		+334	+313	+255	+192	+307	+245	+249	+307	+196	+262	+323	+349
5	Live Load + Imp. - Compr.													
6	Reduced L.L. + Imp. - Compr.						-223	-230	-224	-215				
7	Red. L.L. + Imp. - Tension × D(CF)e		+553	+519	+423	+318	+509	+406	+413	+509	+325	+434	+535	+578
8	Red. L.L. + Imp. - Compr. × D(CF)e						-370	-381	-371	-356				
9	Ratio = Line 4 / Line 1 (Compr.) or Line 8 / Line 1 (Tension)						-0.90	-1.36	-1.05	-0.77				
10	L.L. Sidewalk - Tension		+16	+15	+13	+9	+15	+16	+16	+15	+9	+13	+15	+16
11	L.L. Sidewalk - Compression						-12	-14	-14	-12				
12	Direct Design Stress ②+⑦+⑩ or ②+⑧+⑪		+1,743	+1,668	+1,378	+1,043	+722	+557	+600	+746	+1,088	+1,408	+1,702	+1,792
13	Reverse Design Stress							-134	-31					
14														
15														
	SECTION a Outer Angles	2	4x4x5/8	4x4x5/8	4x4x5/8	4x4x1/2	4x4x3/8	4x4x3/8	4x4x3/8	4x4x3/8	4x4x1/2	4x4x5/8	4x4x5/8	4x4x5/8
	b 1. Web Plate	⊕	24x5/8	24x5/8	26x13/16	28x9/16	24x3/8	24x3/8	24x3/8	24x3/8	28x9/16	26x13/16	24x5/8	24x5/8
	c Cover Plate	2	22x7/16*	22x3/8*	23x3/8*	24x3/8*	23x3/8*	24x3/8*	24x3/8*	23x3/8*	24x3/8*	23x3/8*	22x3/8*	22x7/16*
	d													
	e Inner Angles	2												
	f													
	g 2. Web Plate	3	24x5/8	24x5/8									24x5/8	24x5/8
	h													
25	Length In.													
26	Min. Radius of Gyration - In.													
27	Allowable Stress - Lbs./Sq. In.		24,000	24,000	24,000	24,000	24,000	18,000	18,000	24,000	24,000	24,000	24,000	24,000
28	Actual Gross Area Sq. In.		88.94	87.44	70.44	57.00	39.19	39.94	39.94	39.19	57.00	70.44	87.44	88.94
29	Net Area Sq. In.		74.69	73.44	57.44	47.00	32.44	33.19	33.19	32.44	47.00	57.44	73.44	74.69
30	Actual Unit Stress - Lbs./Sq. In.		23,360	22,710	24,000	22,190	22,260	16,780	18,080	23,000	23,150	24,500	23,150	23,990
31	Material		S	S	S	S	S	C	C	S	S	S	S	S



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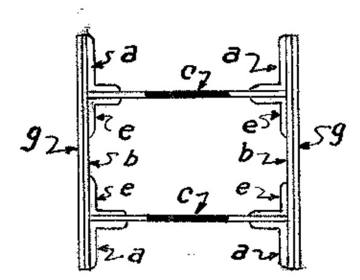
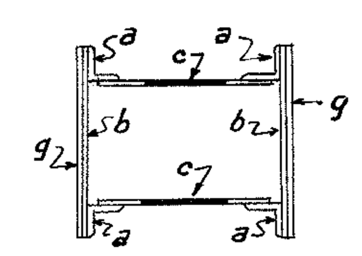


WEB MEMBER



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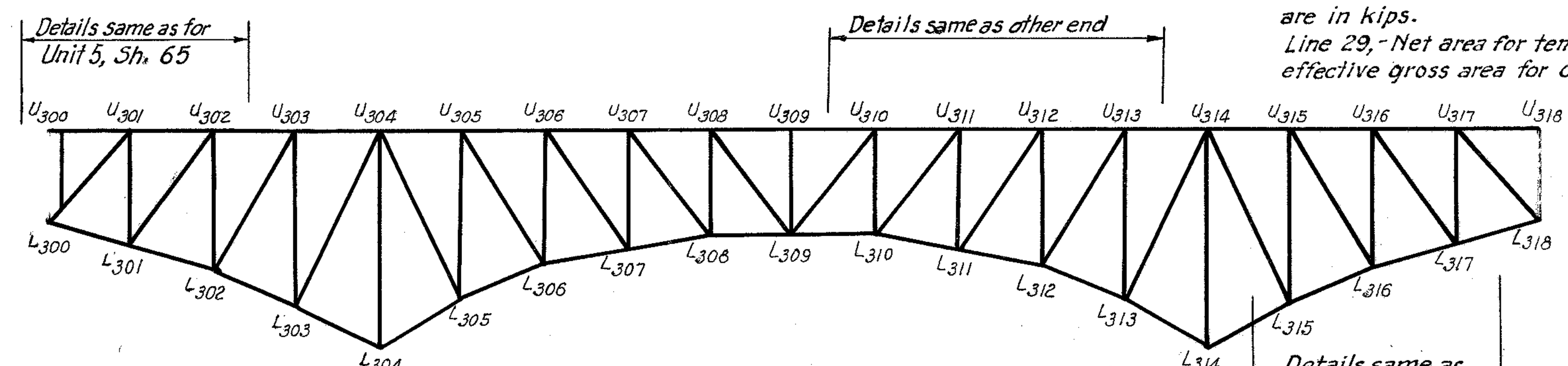


Truss dimensions are shown on Framing Plan, Sh. 20.

For details and connections of access ladder and walkways to navigation lights panel L300, see Sheet 102.

All dead and live load stresses are in kips.
Line 29, - Net area for tension or effective gross area for compression.

LEGEND

- S Special Steel
- C Carbon Steel
- ⊕ 3 Holes out of 24" Webs
- 4 Holes out of 26" and 28" Webs
- * 10" Holes
- ** 11" Holes

PART 3

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO. CU - 42 R - 17.5

STRESS SHEET UNIT 3
NORTH TRUSS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE None
MADE H.W.L. DATE 4-30-54
TRCD G.J.K. H.T.S. DATE 9-15-54
CKD. E.L. DATE 8-17-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

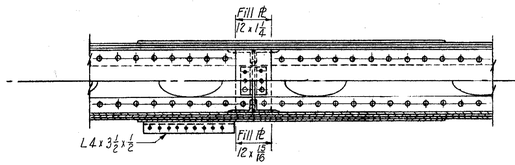
914-1A SHEET 2.47

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

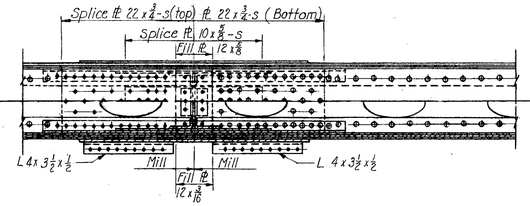
46
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

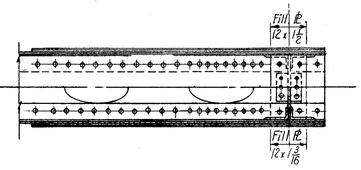
Note:
Elliptical handholes in bottom of chords at 3'-6" centers between L-23, L-25 and in all posts and diagonals. Elliptical handholes 11" x 22" in bottom of chords between L-20, L-23 and L-25, L-28. Except as noted.



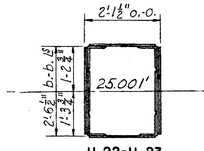
U 23

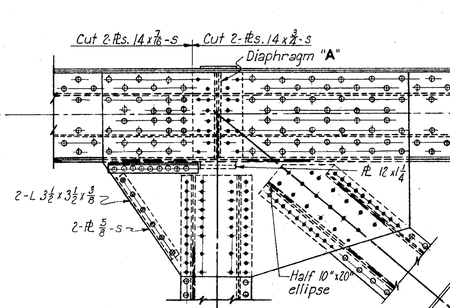


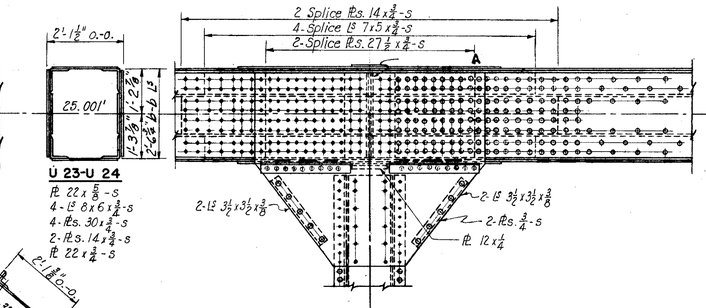
U 24

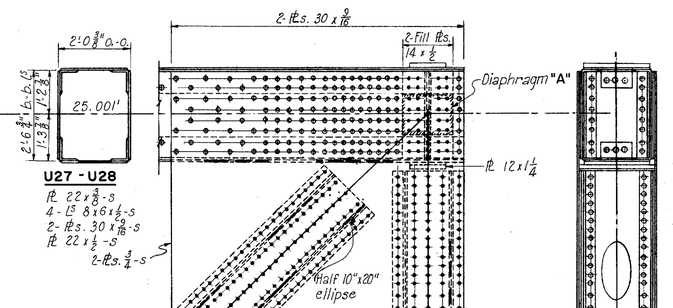


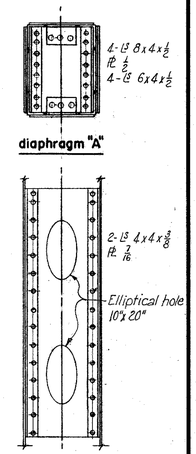
U 28

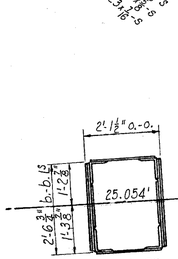


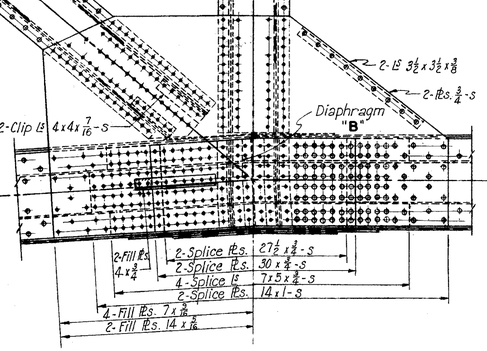


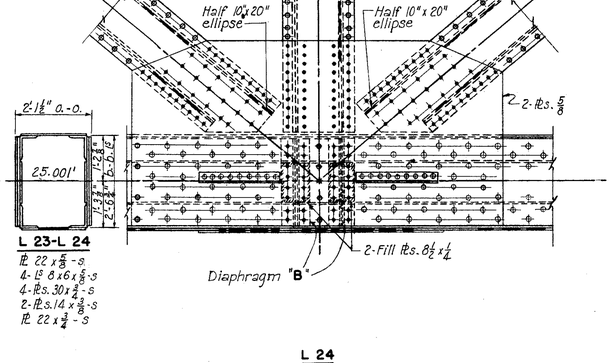


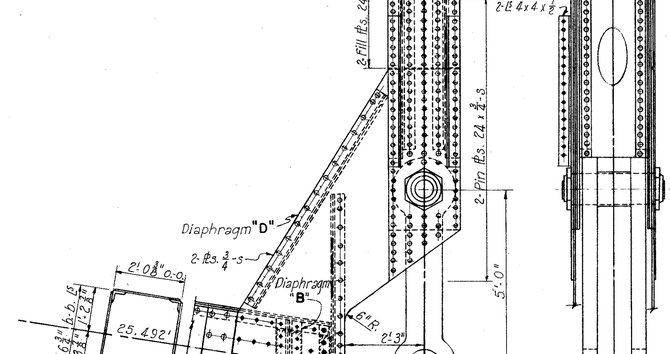


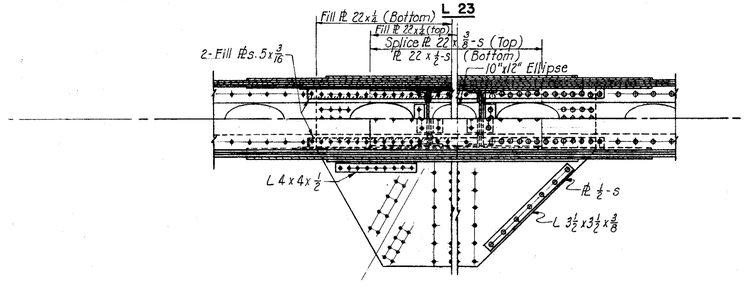


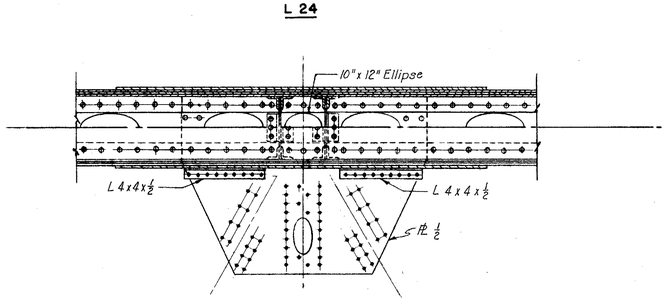












Note: For Link details see Sheet 45.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5

TRUSS DETAILS UNIT 2
PANELS 23, 24, AND 28

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/4" = 1'-0"
MADE DER DATE 4-2-54
TRCD AH DATE 11-21-55
CKD JTK DATE 8-12-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.46

245

6-0

CUY-90-15.45

RECEIVED
FEB 15 1955

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

45
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U 20

U 21

U 22

L 20

L 21

L 22

Note:
Links to be forged or cut from rolled steel slab.
Material to have a minimum yield point of 60,000 psi.
Pins to be forgings with a minimum yield point of 50,000 psi.

Note:
For details and connections of access ladders and walkways to navigation lights, see Sheet 102.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R 17.5
TRUSS DETAILS UNIT 2
PANELS 20 TO 22
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=1'-0" | MADE DER DATE 8-26-54 | TRCD. DATE | CKD. JTK DATE 8-12-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.45

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

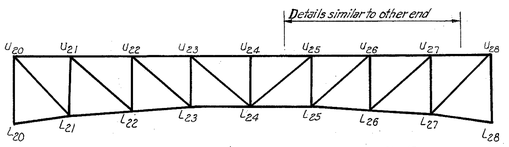
44
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

LINE	MEMBER			TENSION CHORD L20 L21	L21 L22	L22 L23	L23 L24	L24 L25	L25 L26	L26 L27	27 L28	COMPRESSION CHORD U20 U21	U21 U22	U22 U23	U23 U24	U24 U25	U25 U26	U26 U27	U27 U28
1	Dead Load			0	+1054	+1941	+2609	+2609	+1941	+1054	0	-1052	-1937	-2609	-2789	-2789	-2609	-1937	-1052
2	0.8 Dead Load			0	+ 843	+1553	+2087	+2087	+1553	+ 843	0	- 842	-1550	-2087	-2231	-2231	-2087	-1550	- 842
3	Live Load + Imp.-Tension																		
4	Reduced L.L.+ Imp. Tension			0	+ 275	+ 494	+ 651	+ 651	+ 494	+ 275	0								
5	Live Load + Imp. -Comp.																		
6	Reduced L L + Imp.-Comp.											- 272	- 493	- 651	- 675	- 675	- 651	- 493	- 272
7	Reduced L L + Imp.-Ten. xD (CF) e			0	+ 456	+ 819	+1079	+1079	+ 819	+ 456	0								
8	Reduced L L + Imp.-Comp. xD (CF) e											- 451	-817	-1079	-1119	-1119	-1079	-817	- 451
9	Ratio Line 4 / Line 7 (Comp.) or Line 8 / Line 7 (Ten.)																		
10	L L Sidewalk-Tension			0	+ 12	+ 22	+ 30	+ 30	+ 22	+ 12	0								
11	L L Sidewalk-Comp.											- 12	- 22	- 30	- 32	- 32	- 30	- 22	- 12
12	Direct Design Stress			0	+1311	+2394	+3196	+3196	+2394	+1311	0	-1305	-2389	-3196	-3382	-3382	-3196	-2389	-1305
13	Reverse Design Stress																		
14																			
15																			
16																			
17																			
	Section																		
	a. Flange Angles	Holes out for Section	2	4x4x 5/16	8x6x 7/16	8x6x 7/16	8x6x 7/8	8x6x 7/8	8x6x 7/16	8x6x 7/16	4x4x 5/16	8x6x 1/2	8x6x 1/2	8x6x 3/4	8x6x 1/2	8x6x 1/2	8x6x 1/2	8x6x 1/2	8x6x 1/2
	b. 1 st. Web Plate		4	30x 3/8	30x 9/16	30x 9/16	30x 1/2	30x 1/2	30x 9/16	30x 9/16	30x 1/2	30x 9/16	30x 9/16	30x 1/2	30x 1/2	30x 1/2	30x 1/2	30x 9/16	30x 9/16
	c. Top Cover Plate		3	23x 5/16	22x 3/4	22x 3/4	22x 3/4	22x 3/4	22x 7/8	22x 3/4	23x 5/16	22x 7/8	22x 3/4	22x 7/8	22x 7/8	22x 7/8	22x 7/8	22x 3/4	22x 3/4
	d. Bottom Cover Plate		2	23x 3/4 *	22x 1/2 *	22x 1/2 *	22x 3/4**	22x 3/4**	22x 1/2*	22x 1/2*	23x 3/4*	22x 3/4*	22x 1/2*	22x 1/2**	22x 3/4**	22x 3/4**	22x 3/4**	22x 1/2*	22x 1/2*
	g. 2 nd. Web Plate		4			30x 9/16	30x 1/2	30x 3/4	30x 9/16				30x 9/16	30x 1/2	30x 3/4	30x 3/4	30x 1/2	30x 9/16	
	h. Inside Web Plate		2			14x 7/16	14x 3/8	14x 3/8	14x 7/16				14x 1/2	14x 7/16	14x 3/4	14x 3/4	14x 7/16	14x 1/2	
25	Length	In.										300"	300"	300"	300"	300"	300"	300"	300"
26	Min. Radius of Gyration	In.										10.61	10.42	10.82	10.59	10.59	10.82	10.42	10.61
27	Allowable Stress	Lbs./Sq. In.		18,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000	19,630	19,620	19,640	19,630	19,630	19,640	19,620	19,630
28	Actual Gross Area	Sq. In.		43.79	71.22	117.22	156.69	156.69	117.22	71.22	43.79	74.50	122.25	164.76	173.51	173.51	164.76	122.25	74.50
29	Net Area	Sq. In.		36.60	61.10	100.85	134.82	134.82	100.85	61.10	36.60	71.13	122.25	164.76	172.76	172.76	164.76	122.25	71.13
30	Actual Unit Stress	Lbs/Sq. In.		0	21,450	23,740	23,720	23,720	23,740	21,450	0	18,350	19,550	19,400	19,480	19,480	19,400	19,550	18,350
31	Material			C	S	S	S	S	S	S	C	S	S	S	S	S	S	S	S

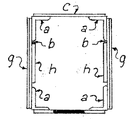
LINE	MEMBER			TENSION WEB MEMBERS U20 L21	U21 L22	U22 L23	U23 L24	L24 U25	L25 U26	L26 U27	L27 U28	COMPRESSION WEB MEMBERS U20 L20	U21 L21	U22 L22	U23 L23	U24 L24	U25 L25	U26 L26	U27 L27	U28 L28
1	Dead Load			+1473	+1199	+ 883	+ 235	+ 235	+ 883	+1199	+1473	-1188	-937	-702	-280	-135	-280	-702	-937	-1112
2	0.8 Dead Load			+1178	+ 960	+ 707	+ 188	+ 188	+ 707	+960	+1178	- 951	-750	-562	-224	-108	-224	-562	-750	- 890
3	Live Load + Imp.-Tension																			
4	Reduced L L + Imp.-Tension			+ 382	+ 332	+ 276	+ 168	+ 168	+ 276	+ 332	+ 382			+ 9	+ 37		+ 37	+ 9		
5	Live Load + Imp.-Comp.																			
6	Reduced L L + Imp.-Comp.				-1111	- 30	+ 104	- 104	- 30	- 11		-282	-239	+192	+113	- 49	-113	-192	-239	-277
7	Reduced L L + IMP.-Ten. xD (CF) e			+ 633	+550	+ 458	+ 278	+ 278	+ 458	+ 550	+ 633			+ 15	+ 61		+ 61	+ 15		
8	Reduced L L + IMP.-Comp. xD (CF) e				-18	- 50	-172	-172	- 50	- 18		-467	-396	-318	-187	- 81	-187	-318	-396	-459
9	Ratio = Line 4 / Line 7 (Comp.) or Line 6 / Line 7 (Ten.)				0.009	0.034	0.443	0.443	0.034	0.009				-0.013	+0.132		-0.132	-0.013		
10	L L Sidewalk-Tension			+ 17	+ 14	+ 11	+ 6	+ 6	+ 11	+ 14	+ 17				+ 1		+ 1			
11	L L Sidewalk-Comp.					- 1	- 3	- 3	- 1			- 13	- 11	- 8	- 4	- 1	- 4	- 8	- 11	- 13
12	Direct Design Stress			+1828	+1524	+1176	+ 472	+ 472	+1176	+1524	+1828	-1431	-1157	-888	-415	-190	-415	-888	-1157	-1362
13	Reverse Design Stress																			
14																				
15																				
16																				
17																				
	Section																			
	a. Flange Angles	Holes out for Section	2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 1/2	4x4x 3/8	4x4x 3/8	4x4x 3/8	4x4x 1/2	4x4x 3/8	4x4x 3/8
	b. 1 St. Web. Plate		3	24x 3/8	24x 1/2	24x 3/8	24x 3/8	24x 3/8	24x 3/8	24x 1/2	24x 5/8	24x 1/2	24x 11/16	24x 3/16	24x 3/8	24x 3/8	24x 3/8	24x 9/16	24x 11/16	24x 1/2
	c. Cover Plates		2	22x 1/2 **	22x 7/16**	23x 7/16**	23x 3/8**	23x 3/8**	23x 7/16**	22x 7/16**	22x 1/2**	23x 7/16**	23x 7/16**	23x 3/8**	23x 3/8**	23x 3/8**	23x 3/8**	23x 3/8**	23x 7/16**	23x 7/16**
	g. 2 nd. Web Plate		3	24x 3/8	24x 1/2					24x 1/2	24x 3/8	24x 7/16								24x 7/16
25	Length	In.										342"	294"	274.5"	255"	255"	255"	274.5"	294"	342"
26	Min. Radius of Gyration	In.										7.57	7.70	7.68	7.70	7.70	7.70	7.68	7.70	7.57
27	Allowable Stress	Lbs./Sq. In.		24,000	24,000	24,000	18,000	18,000	24,000	24,000	24,000	19,060	19,330	19,410	14,720	14,720	14,720	19,410	19,330	19,060
28	Actual Gross Area	Sq. In.		90.44	76.94	59.82	39.19	39.19	59.82	76.94	90.44	74.82	62.82	51.75	39.19	39.19	39.19	51.75	62.82	74.82
29	Net Area	Sq. In.		75.94	64.19	49.32	32.44	32.44	49.32	64.19	75.94	74.82	61.27	46.35	31.88	31.88	31.88	46.35	61.27	74.82
30	Actual Unit Stress	Lbs./Sq. In.		24,070	23,720	23,850	14,550	14,550	23,850	23,720	24,070	19,120	18,900	19,160	13,000	5,950	13,000	19,160	18,900	18,220
31	Material			S	S	S	C	C	S	S	S	S	S	S	C	C	C	S	S	S

S = Special Steel
C = Carbon Steel
* = 11" Hand Hole Cut
** = 10" Hand Hole Cut

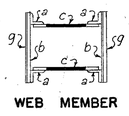


Truss dimensions are shown on Framing Plan, Sh. 19.
North and south trusses are alike.

All dead load and live load stresses are in kips.
Line 29,- Net area for tension or effective gross area for compression.



CHORD



WEB MEMBER

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17 5
STRESS SHEET UNIT 2
NORTH AND SOUTH TRUSSES
CLEVELAND CUYAHOGA COUNTY OHIO

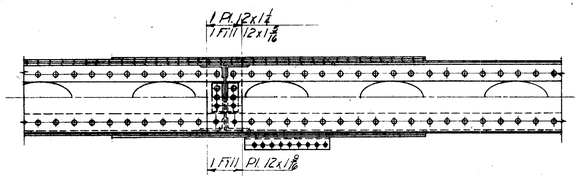
SCALE None
MADE DME DATE 5-5-54
TRCD NLJ & WJK DATE 9-20-54
CKD RMK. DATE 7-26-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.44

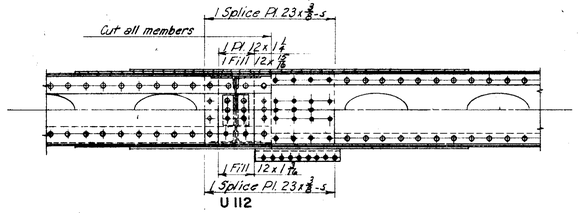
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

43
122

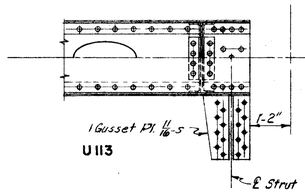
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



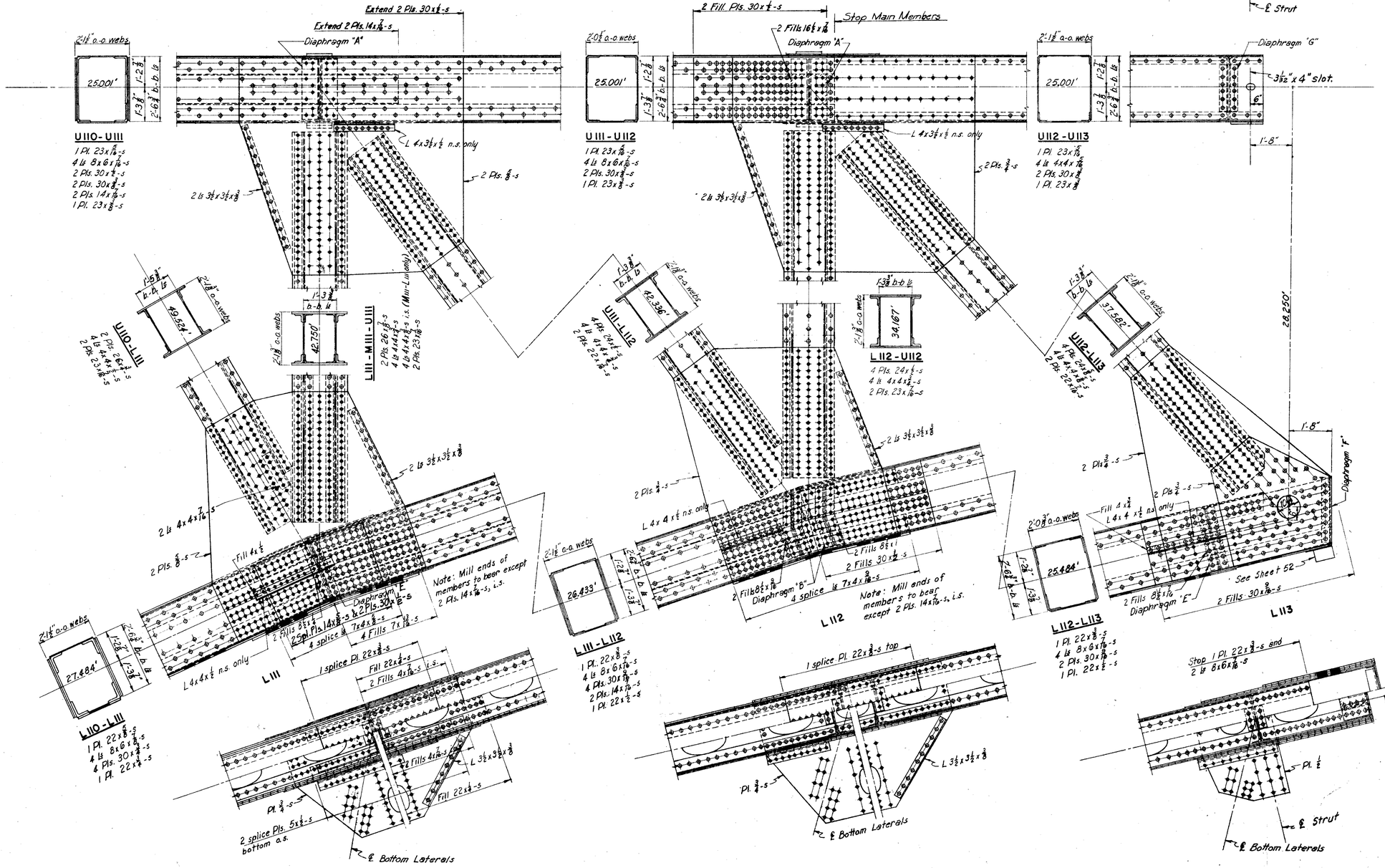
U 111

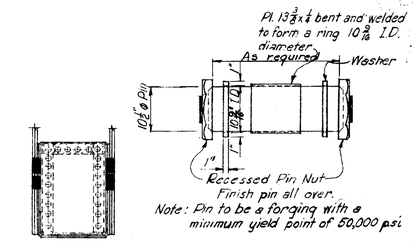


U 112



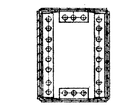
U 113

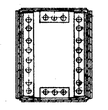




PIN DETAIL
Scale: 1" = 1'-0"

DIAPHRAGM "F"
3 Lg 4 x 4 x 3/8
1 Pl. 21 x 2 7/16 Bent
2 Fills 4 x 7/16
1 Fill 4 x 3/8
1 Fill 11 x 7/16


DIAPHRAGM "E"
8 Lg 4 x 4 x 1/2
1 Pl. 1/2


DIAPHRAGM "B"
6 Lg 4 x 4 x 1/2
1 Pl. 1/2

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17.5

TRUSS DETAILS UNIT 1
PANELS 111, 112, & 113

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3/8" and 1"=1'-0"
MADE D.L.C. DATE 5-24-54
TRCD. D.L.C. DATE 10-1-54
CKD. J.G.S. DATE 10-5-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.43

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	42 / 122
2	OHIO			

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U109

U108–U109

U109–U110

U110

U110 – U111

L108–L109

L108–U109

L109–M109–U109

L109–L110

L109

U109–U110

U110–M110–L110

L110

L110–L111

U110–U111

DIAPHRAGM "H"

SECTION A-A

For details and connections of ladder and access walkway see Sh. 101

Note: Fill post with concrete to line marked "Conc."

Note: Mill ends of members to bear.

* 5-23-56 HNT&B

PART 3

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO. CU - 42 R-17.5

TRUSS DETAILS, UNIT I
PANELS 109 AND 110

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE D.L.C. DATE 6-5-54
TRCD. V.E.A. DATE 10-1-54
CKD. J.G.S. DATE 10-5-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.42

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

41
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U 106

U 107

U 108

L 106

L 107

L 108

Note: For Details of Diaphragms "A" and "E" See Sheet 43

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42 R-17.5
TRUSS DETAILS UNIT I
PANELS 106, 107, 108
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"-1'-0"
MADE VEA DATE 6-8-54
TRCD. VEA DATE 10-10-54
CKD. JGS DATE 10-13-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.41

260

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

40
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U103

U104

U105

U102-U103
4 Lb 8×6×7/16 -S
2 Pls. 30×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×3/8 -S

U103-U104
4 Lb 8×6×7/16 -S
2 Pls. 30×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×3/8 -S

U104-U105
4 Lb 8×6×7/16 -S
2 Pls. 30×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×3/8 -S

U105-U106
4 Lb 8×6×7/16 -S
4 Pls. 30×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×3/8 -S

L102-L103
4 Lb 8×6×7/16 -S
2 Pls. 30×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×3/8 -S

L103-L104
4 Lb 8×6×7/16 -S
2 Pls. 30×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×3/8 -S

L104-L105
4 Lb 8×6×7/16 -S
4 Pls. 30×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×1/2 -S

L105-L106
4 Lb 8×6×7/16 -S
2 Pls. 30×3/8 -S
2 Pls. 14×3/8 -S
1 Pl. 23×5/16 -S
1 Pl. 23×1/2 -S

L103

L104

L105

Note: For Details of Diaphragms "A" and "B" See Sheet 43.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.15
TRUSS DETAILS UNIT I
PANELS 103, 104, 105
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE VEA DATE 5-17-54
TRCD. VEA DATE 10-1-54
CKD. JGS DATE 10-8-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET: 2.40

260

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

39
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

U100

U101

U102 Cut main members Mill to bear

DIAPHRAGM "C"
4 Ls 4×4×⅜
1 Pl. × 1'
1 L 8×8×½
1 Fill Pl 8×⅝

L100

L101

L102

Note: For details of Diaphragm "A" and "B" See Sheet 43.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5
TRUSS DETAILS UNIT 1
PANELS 100, 101, 102
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=1'-0"
MADE VEA DATE 4-26-54
TRCD. VEA DATE 7-21-54
CKD. JGS DATE 10-5-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.39

250

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

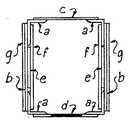
38
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

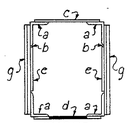
LINE	MEMBER	TENSION CHORD													COMPRESSION CHORD													
		L100 L101	L101 L102	L102 L103	U104 U105	U105 U106	U106 U107	U107 U108	U108 U109	U109 U110	U110 U111	U111 U112	U112 U113		U100 U101	U101 U102	U102 U103	U103 U104	L103 L104	L104 L105	L105 L106	L106 L107	L107 L108	L108 L109	L109 L110	L110 L111	L111 L112	L112 L113	
1	Dead Load	+334	+384	+186	+222	+769	+1310	+1874	+2351	+2311	+1771	+998	0		0	-334	-384	-185	-224	-775	-1351	-1931	-2492	-2939	-3128	-2541	-1873	-1018	
2	0.8 Dead Load	+267	+307	+149	+178	+616	+1048	+1500	+1881	+1849	+1417	+799	0		0	-267	-307	-148	-179	-620	-1081	-1545	-1994	-2351	-2503	-2033	-1499	-815	
3	Live Load+Imp.-Tension																												
4	Reduced LL+Imp.-Tension	+271	+453	+556	+513	+585	+595	+603	+581	+484	+391	+230	0		0	+153	+295	+428	+550	+501	+392	+272	+145	0	0	0	0	0	
5	Live Load+Imp.-Comp.																												
6	Reduced LL+Imp.-Comp.	-153	-295	-428	-545	-497	-385	-266	-129	0	0	0	0		0	-271	-453	-556	-519	-587	-613	-620	-617	-597	-623	-532	-412	-236	
7	Reduced LL+Imp-Ten. x D(CF)e	+449	+751	+922	+850	+970	+986	+1000	+963	+802	+648	+381	0			+254	+489	+709	+912	+830	+650	+451	+240	0	0	0	0	0	
8	Reduced LL+Imp-Comp x D(CF)e	-254	-489	-709	-903	-824	-638	-441	-214	0	0	0	0			-449	-751	-922	-860	-973	-1016	-1028	-1023	-990	-1033	-882	-683	-391	
9	Ratio* Line 7 / Line 8 or Line 6 / Line 4	0.458	0.768	2.300	2.455	0.647	0.294	0.142	0.055	0	0	0	0		0	0.458	0.768	2.310	2.455	0.647	0.290	0.141	0.058	0	0	0	0	0	
10	LL Sidewalk-Tension	+13	+22	+27	+29	+33	+33	+34	+32	+26	+20	+11	0		0	+9	+16	+24	+27	+25	+19	+13	+6	0	0	0	0	0	
11	LL Sidewalk-Comp.	-9	-16	-24	-27	-25	-19	-13	-6	0	0	0	0		0	-13	-22	-27	-29	-33	-34	-35	-34	-33	-35	-28	-21	-12	
12	Direct Design Stress	+729	+1080	+1098	+1057	+1619	+2067	+2534	+2876	+2677	+2085	+1191	0		0	-729	-1080	-1097	-1068	-1626	-2131	-2608	-3051	-3374	-3571	-2943	-2203	-1218	
13	Reverse Design Stress			-584	-752													+585	+760										
	SECTION (Holes out for Tension)																												
a	Flange Angles 2	4x4x½	8xGx7/16	8xGx7/16	8xGx7/16	8xGx7/16	8xGx5/8	8xGx5/8	8xGx5/8	8xGx5/8	8xGx5/8	8xGx7/16	4x4x5/16		8xGx7/16	8xGx7/16	8xGx7/16	8xGx7/16	8xGx7/16	8xGx7/16	8xGx7/16	8xGx5/8	8xGx5/8	8xGx1/2	8xGx1/2	8xGx1/2	8xGx7/16	8xGx7/16	
b	1st Outside Web Plate 4	30x3/8	30x3/8	30x3/8	30x3/8	30x3/8	30x5/8	30x5/8	30x5/8	30x5/8	30x5/8	30x3/8	30x3/8		30x3/8	30x3/8	30x½	30x½	30x3/8	30x3/8	30x¾	30x¾	30x¾	30x¾	30x¾	30x¾	30x¾	30x3/16	30x3/16	
c	Top Cover Plate 3	23x5/16	23x5/16	23x5/16	23x5/16	23x5/16	22x3/8	22x3/8	22x3/8	22x3/8	23x5/16	23x5/16	23x5/16		23x5/16	23x5/16	23x5/16	23x5/16	23x3/8	23x3/8	23x3/8	23x3/8	22x5/8	22x5/8	22x5/8	22x5/8	22x3/8	22x3/8	
d	Bottom Cover Plate 2	23x3/8(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)	22x1/2(11" Hole)	22x1/2(11" Hole)	22x1/2(11" Hole)	22x1/2(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)		23x3/8(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)	23x3/8(11" Hole)	23x½(11" Hole)	23x½(11" Hole)	23x½(11" Hole)	22x¾(10" Hole)	22x3/8(10" Hole)	22x3/8(10" Hole)	22x3/8(10" Hole)	22x½(11" Hole)	22x½(11" Hole)	
e	1st Inside Web Plate 2						14x5/8	14x5/8	14x5/8	14x3/8	14x7/16										14x5/8	14x5/8		14x½	14x½		14x7/16		
f	2nd Inside Web Plate 4																					28x5/16							
g	2nd Outside Web Plate 4					30x3/8		30x3/8	30x5/8	30x5/8	30x½								30x3/8				30x¾	30x¾	30x¾	30x¾	30x5/16		
25	Length In.														300	300	300	300	302.4	302.4	309.3	309.3	317.8	327.2	327.2	329.8	317.2	305.8	
26	Min. Radius of Gyration In.														10.98	10.98	11.20	11.20	10.63	11.19	10.82	10.38	10.80	10.81	10.58	10.80	10.40	10.62	
27	Allowable Stress Lbs/Sq.In.	18,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000		14,810	14,810	19,670	19,670	19,630	19,660	19,620	19,590	19,600	19,580	19,560	19,570	19,570	19,620	
28	Actual Gross Area Sq. In.	49.19	57.91	57.91	57.91	80.41	102.19	124.69	139.69	132.69	100.16	57.91	43.79		57.91	57.91	65.41	65.41	60.85	83.35	110.57	135.07	158.67	172.67	183.17	158.67	117.22	70.22	
29	Net Area Sq. In.	40.50	49.72	49.72	49.72	69.22	87.57	107.07	120.07	114.07	86.22	49.72	36.60		51.51	51.51	59.49	59.49	54.28	82.97	110.19	135.07	158.67	172.67	183.17	158.67	117.22	67.85	
30	Actual Unit Stress Lbs/Sq.In.	18,000	21,720	22,080	21,260	23,390	23,600	23,700	23,950	23,520	24,180	23,950	0		0	14,150	18,160	18,450	19,680	19,560	19,320	19,340	19,200	19,540	19,460	18,550	18,800	17,930	
31	Material	C	S	S	S	S	S	S	S	S	S	S	C		C	C	S	S	S	S	S	S	S	S	S	S	S	S	

LINE	MEMBER	TENSION WEB MEMBERS													COMPRESSION WEB MEMBERS															
		L102 U103	L103 U104	L104 U105	L105 U106	L106 U107	L107 U108	L108 U109	U109 L110	U110 L111	L111 L112	L112 L113	U101 L101	U102 L102	U100 L100	L100 U101	L101 U102	U103 L103	L104 U104	L105 L105	L106 M106	M106 L106	M107 M107	M107 L107	U108 M108	M108 L108	U109 M109	M109 L109	U110 M110	M110 L110	U111 M111	M111 L111	U112 L112
1	Dead Load	+295	+618	+881	+928	+1082	+1022	+842	+914	+1070	+1306	+1501	+230	+67	-102	-488	-73	-339	-595	-816	-889	-1032	-1075	-1218	-1051	-1195	-1761	-1910	-1078	-1222	-1193	-1336	-1256
2	0.8 Dead Load	+236	+495	+705	+743	+866	+818	+674	+731	+856	+1045	+1201	+184	+54	-82	-391	-59	-271	-476	-653	-711	-826	-860	-975	-841	-956	-1409	-1528	-863	-978	-954	-1069	-1005	
3	Live Load+Imp.-Tension																																	
4	Reduced LL+Imp. Tension	+207	+196	+211	+252	+277	+308	+315	+201	+238	+298	+347	+254	+183	0	+225	+208	+132	+58	+33	+2	+2	+2	+2	+2	+40	+40	+23	+23	0	0	0	0	0
5	Live Load+Imp.-Comp.																																	
6	Reduced LL+Imp.-Comp.	-219	-112	-69	-7	-3	-47	-105	0	0	0	0	-163	-152	-47	-397	-296	-154	-154	-175	-220	-271	-249	-296	-288	-333	-347	-386	-220	-267	-255	-296	-274	
7	Reduced LL+Imp-Ten. x D(CF)e	+343	+325	+349	+418	+459	+511	+522	+333	+395	+494	+575	+421	+303	0	+373	+345	+219	+96	+55	+4	+4	+4	+4	+4	+66	+66	+38	+38	0	0	0	0	0
8	Reduced LL+Imp-Comp x D(CF)e	-363	-186	-115	-12	-5	-78	-174	0	0	0	0	-270	-252	-78	-658	-491	-255	-255	-290	-365	-449	-413	-491	-477	-552	-575	-640	-365	-443	-423	-491	-454	
9	Ratio* Line 7 / Line 8 or Line 6 / Line 4	0.742	0.182	0.078	0.007	0.003	0.046	0.125	0	0	0	0	0.709	2.265	0	0.461	2.850	0.407	0.098	0.041	0.002	0.002	0.002	0.002	0.002	0.038	0.033	0.013	0.012	0	0	0	0	0
10	LL Sidewalk-Tension	+12	+11	+13	+11	+13	+14	+15	+10	+12	+15	+17	+12	+8	0	+13	+12	+6	+2	+1	0	0	0	0	0	+2	+2	+1	+1	0	0	0	0	0
11	LL Sidewalk-Comp.	-9	-4	-2	0	0	-3	-6	0	0	0	0	-9	-8	-1	-19	-13	-9	-9	-11	-10	-12	-12	-14	-14	-16	-20	-22	-12	-14	13	-15	-14	
12	Direct Design Stress	+591	+831	+1067	+1172	+1338	+1343	+1211	+1074	+1263	+1554	+1793	+617	+365	-161	-1068	-563	-535	-740	-954	-1086	-1287	-1285	-1480	-1332	-1524	-2004	-2190	-1240	-1435	-1390	-1575	-1473	
13	Reverse Design Stress													-206			+298																	
	SECTION (Holes out for Tension)																																	
a	Outer Flange Angles 2	4x4x⅜	4x4x⅜	4x4x½	4x4x5/8	4x4x¾	4x4x5/8	4x4x5/8	4x4x½	4x4x½	4x4x¾	4x4x5/8	4x4x⅜	4x4x⅜	4x4x⅜	4x4x5/8	4x4x⅜	4x4x⅜	4x4x⅜	4x4x½	4x4x5/8	4x4x5/8	4x4x¾	4x4x¾	4x4x¾	Gx4x5/8	Gx4x5/8	7x4x⅞	7x4x⅞	Gx4x½	Gx4x½	4x4x¾	4x4x¾	4x4x¾	
b	1st Web Plates 3	24x⅜	24x7/16	24x5/8	24x5/8	24x¾	26x¾	28x5/8	28x½	26x¾	24x½	24x5/8	24x7/16	24x⅜	24x⅜	24x1/16	24x⅜	24x⅜	24x½	24x⅜	24x1/16	24x1/16	26x¾	26x¾	28x¾	28x¾	30x5/8	30x⅝	28x¾	28x¾	26x⅞	26x⅞	24x½	
c	Cover Plates 2	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	24x7/8(10" Hole)	23x7/8(10" Hole)	22x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	24x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x½(10" Hole)	23x½(10" Hole)	22x5/8(10" Hole)	22x5/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	23x7/8(10" Hole)	
e	Inner Flange Angles 2																																	
g	2nd Web Plates 3										24x½	24x5/8																					24x½	
	Length In.														318	438.8	437.2	342	379.5	417	492	492	567	567	672	672	816	816	650	650	513	513	410	
	Min. Radius of Gyration In.														7.70	7.70	7.70	7.70	7.60	7.63	7.69	7.50	8.00	7.78	8.56	8.28	9.08	8.87	8.50	8.23	7.96	7.75	7.63	
	Allowable Stress Lbs/Sq.In.	18,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	18,000	18,000	14,570	18,510	18,520	19,090	18,850	18,630	18,020	18,020	17,560	17,560	17,040	17,040	16,110	16,110	17,130	17,130	17,980	17,980	18,670	
	Actual Gross Area Sq.In.	39.19	42.19	54.75	59.82	69.14	68.82	63.19	55.25	65.38	80.26	88.94	42.19	39.19	39.19	61.19	39.19	39.19	45.94	56.38	62.82	74.26	72.14	83.58	78.44	89.88	125.44	136.88	72.38	83.82	78.64	90.08	81.14	
	Net Area Sq.In.	32.44	35.07	45.50	49.32	56.89	56.07	51.69	45.50	53.63	66.51	74.69	35.07	32.44	31.88	59.64	31.33	31.33	39.28	52.78	61.27	74.26	72.14	83.58	78.44	89.88	125.44	136.88	72.38	83.82	78.64	90.08	81.14	
	Actual Unit Stress Lbs/Sq.In.	18,220	23,700	23,450	23,760	23,500	23,950	23,430	23,600	23,550	23,370	24,000	17,600	11,250	5,050	17,910	17,970	17,070	18,820	18,080	17,700	17,300	17,800	17,700	17,000	16,950	15,980	16,000	17,130	17,130	17,670	17,500	18,150	
	Material	C	S	S	S	S	S	S	S	S	S	S	C	C	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	

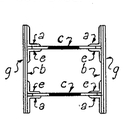
S = Special Steel
C = Carbon Steel



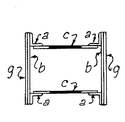
CHORD



CHORD



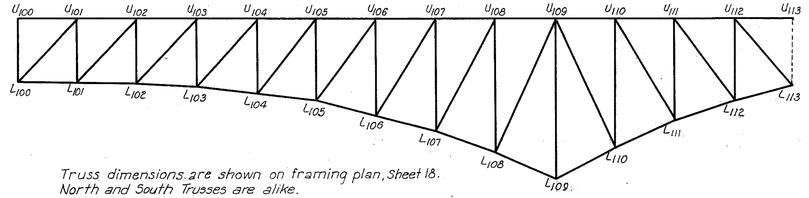
WEB MEMBER



WEB MEMBER

/ All dead and live load stresses are in kips.

Line 29, net area for tension or effective gross area for compression.



Truss dimensions are shown on framing plan, Sheet 18.
North and South Trusses are alike.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5
STRESS SHEET UNIT I
NORTH AND SOUTH TRUSSES
CLEVELAND CUYAHOGA COUNTY OHIO

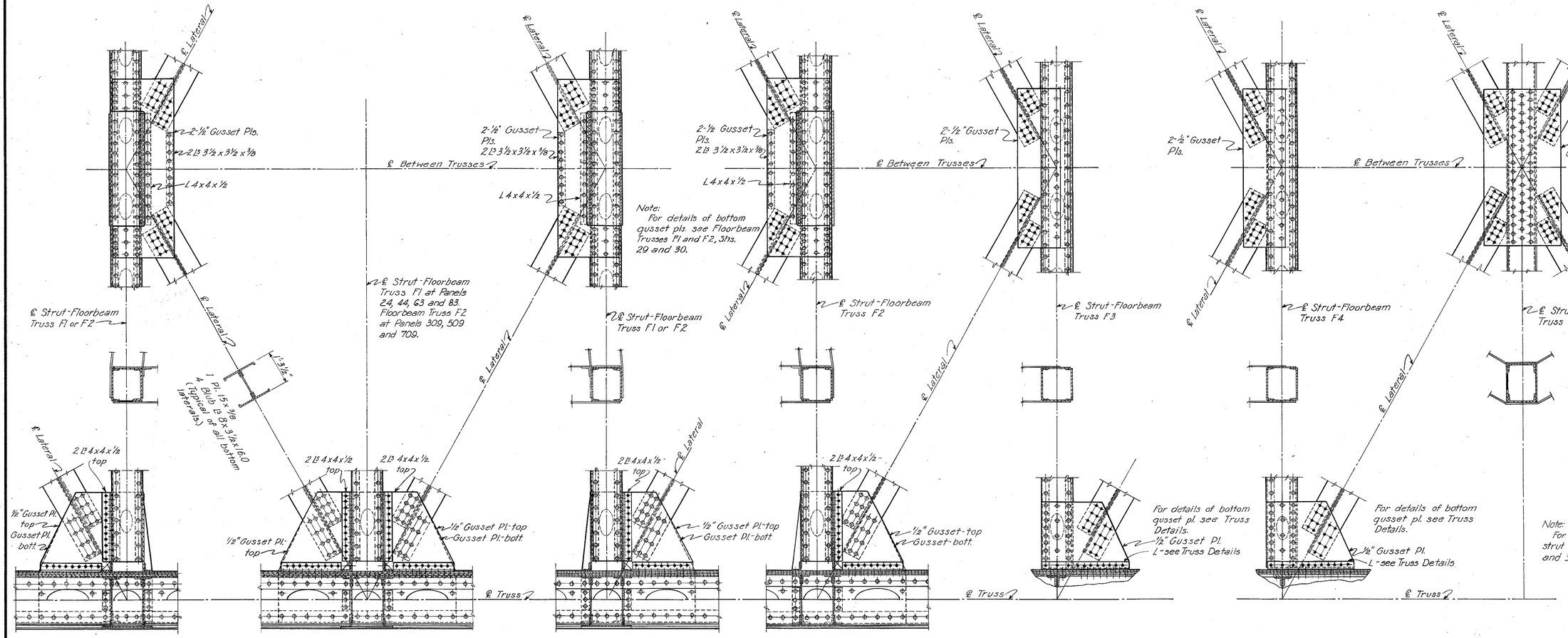
SCALE None
MADE D.M.C. DATE 5-7-54
TRCD E.B.R. DATE 9-16-54
CKD G.J.K. DATE 9-16-54

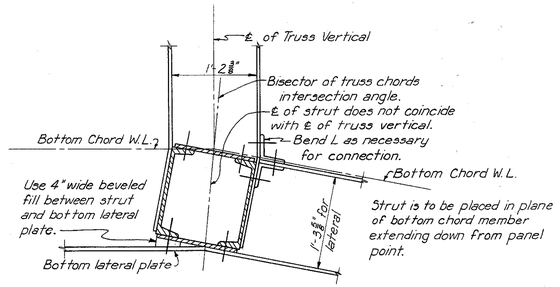
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.38

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

37
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT





RELATION OF STRUT TO TRUSS MEMBERS
Floorbeam Trusses F1 and F2
Scale: 1"=1'0"

Material for Floorbeam Truss Bottom Struts is listed on these sheets:
F1 - Sheet 29
F2 - Sheet 30
F3 - Sheet 31
F4 - Sheet 31
Struts at Piers - Sheets 33 and 34

Note:
For additional details of connections, see respective Floorbeam Trusses.
For additional details of lower gusset pl. connecting laterals and strut to truss see Truss Details.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5

BOTTOM LATERALS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2" = 1'-0" except as noted
MADE F.K.D. DATE 5-13-54
TRCD. R.R. DATE 9-17-54
CKD D.M.D. DATE 9-29-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

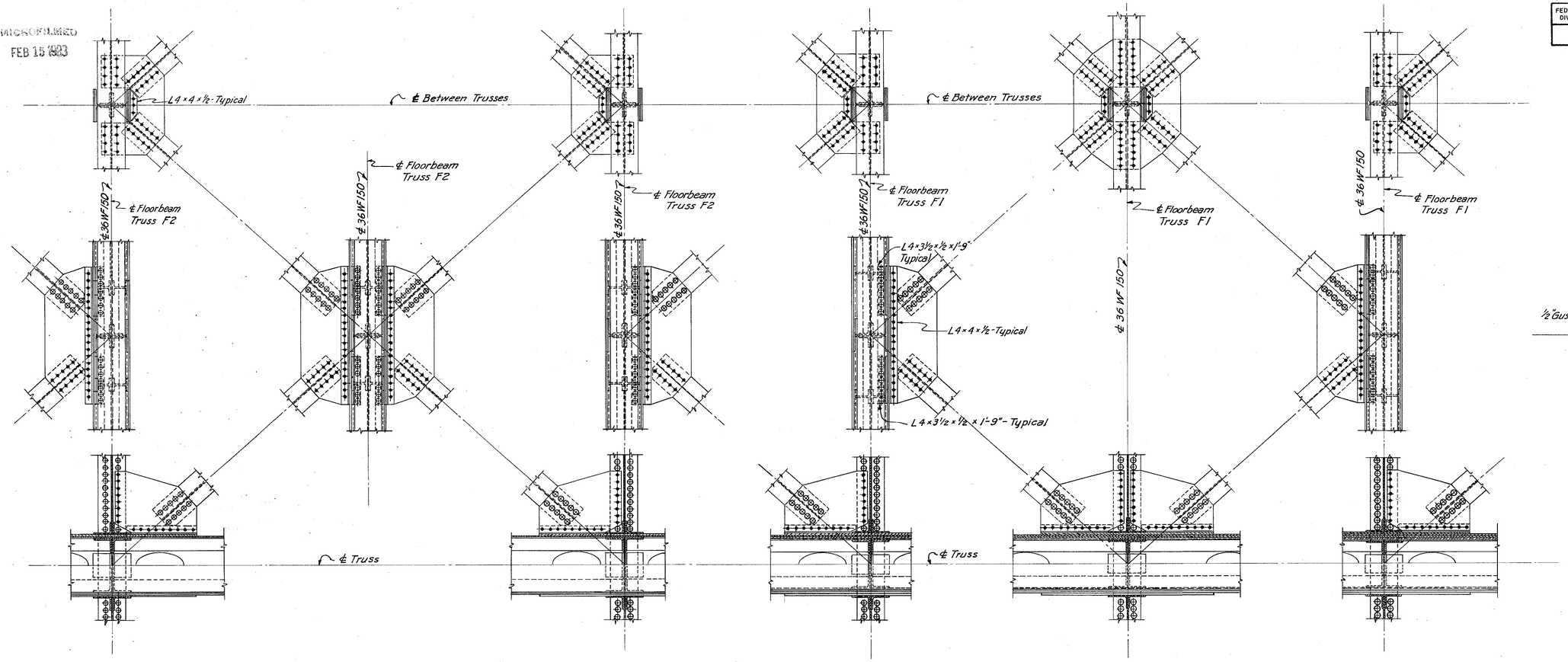
914-1A SHEET 2.37

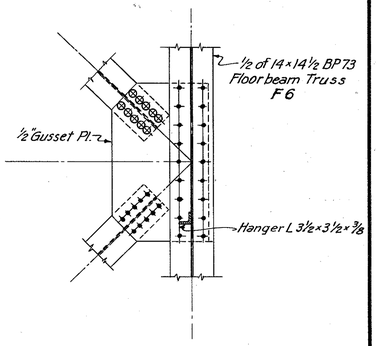
321

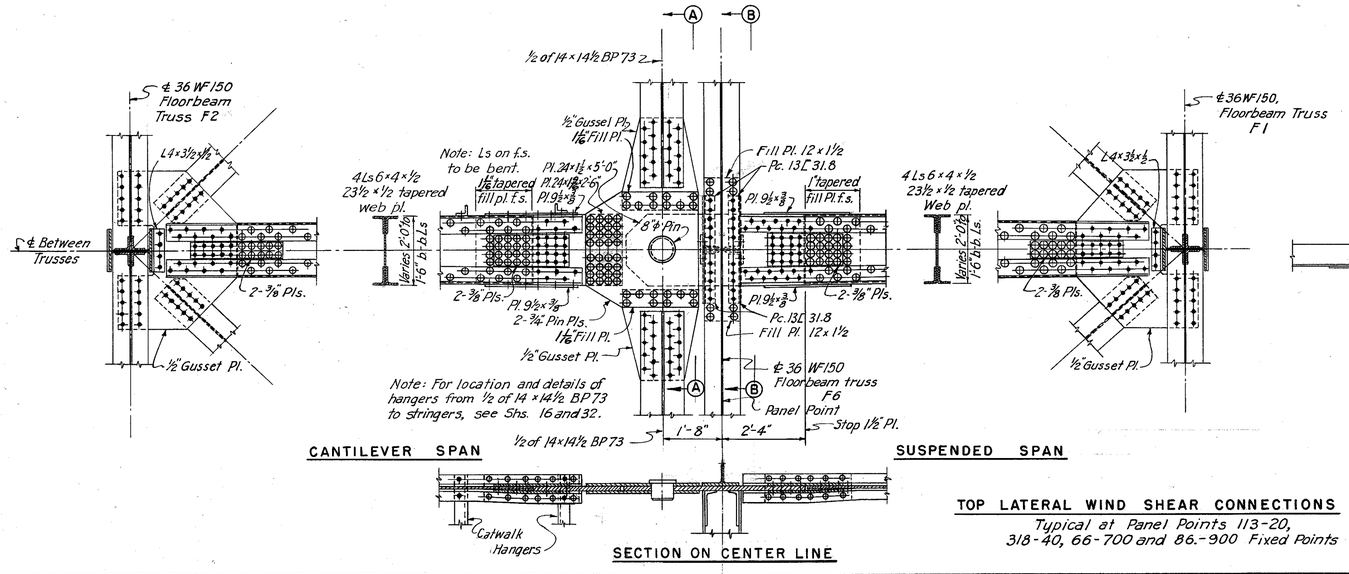
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

36
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT







TOP LATERAL WIND SHEAR CONNECTIONS
Typical at Panel Points 113-20, 318-40, 66-700 and 86.-900 Fixed Points

Note: All top laterals on this Sheet are ½ of 12 × 12 BP 53. All gusset pls. are ½".

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
TOP LATERALS
CLEVELAND CUYAHOGA COUNTY OHIO

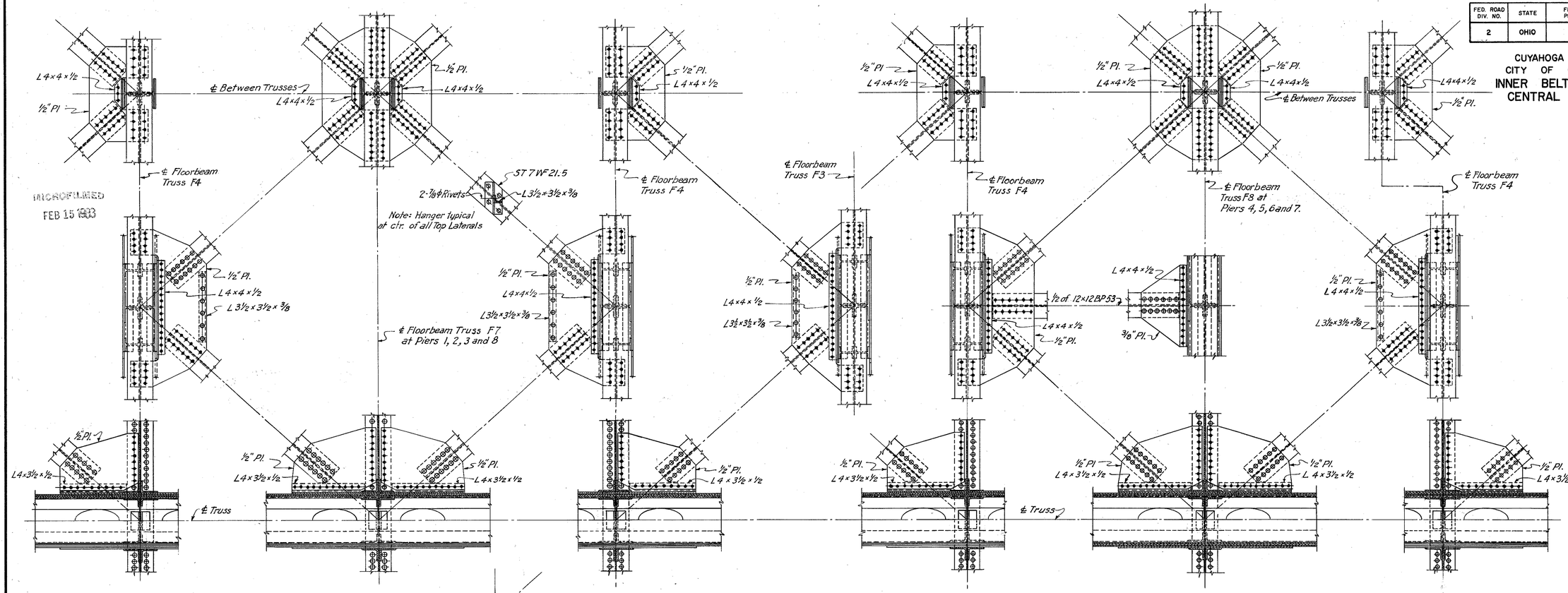
SCALE ½" = 1'-0" except as noted
MADE F.K.D. DATE 3-31-54
TRCD H.T.S. DATE 10-28-54
CKD. D.M.D. DATE 11-1-54

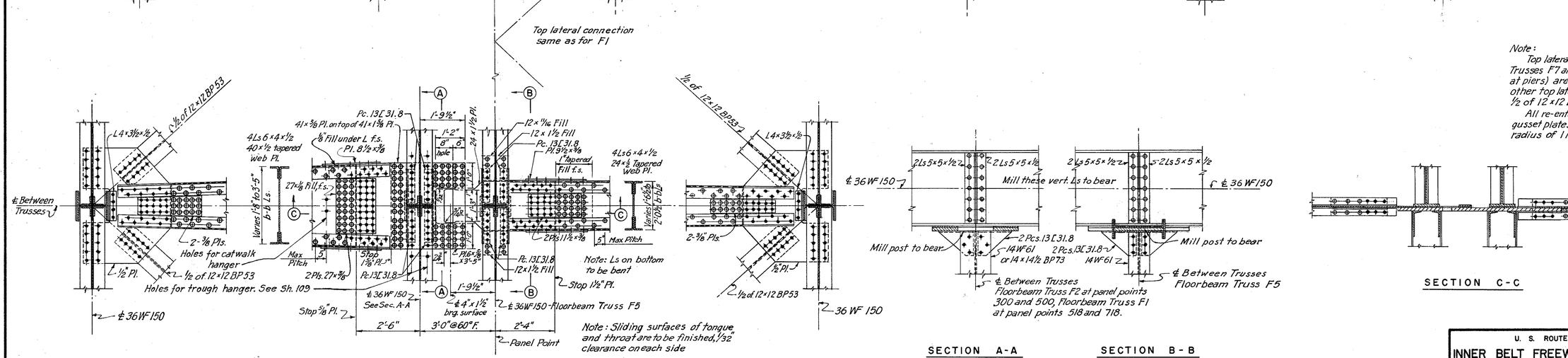
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.36

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

35
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT





CANTILEVER SPAN

SUSPENDED SPAN

SECTION A-A

SECTION B-B

SECTION C-C

Note:
Top laterals connecting to Floorbeam Trusses F7 and F8 (floorbeam trusses at piers) are ½ of 12×12 BP53's). All other top laterals on this sheet are ½ of 12×12 BP53.

All re-entrant cuts in top lateral gusset plates shall have a minimum radius of 1 inch.

TOP LATERAL WIND SHEAR CONNECTION

Typical at Panel Points 28-300, 48-500, 518-60 and 718-80, Expansion Points

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5

TOP LATERALS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½" = 1'-0"
MADE F.K.D. DATE 4-6-54
TRCD. H.J.S. DATE 10-18-54
CKD. D.M.P. DATE 10-19-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.35

3/6

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

34
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION K-K

SECTION E-E

DETAIL "A"
Scale: 1" = 1'-0"

SECTION G-G

SECTION J-J

SECTION H-H

Note:
For additional details of top lateral connections, see Framing Plans and Sheet 35.
For details of bottom lateral connections, see Framing Plans and Sheet 37.
For details of connection of floorbeam to truss, see Sheet 28.
For additional details of strut connection to truss, see Truss Details.

Location	'D' (b. to b. L's.)
Pier 4	1'-6 15/16"
Pier 5	1'-7"
Pier 6	1'-7 3/16"
Pier 7	1'-7"

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

FLOORBEAM TRUSS F8
AT PIERS 4, 5, 6, & 7

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2"=1'-0" or as shown
MADE F.K.D. DATE 4-27-54
TRCD. N.A.M. DATE 9-13-54
CKD. O.M.D. DATE 9-20-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.34

213

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

33
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION I-I

SECTION E-E

SECTION J-J

SECTION H-H

Note: One bolt Z or 2 bolts Y according to the rivet pattern of the post.

Note:
For additional details of top lateral connections, see Framing Plans and Sh. 35.
For details of bottom lateral connections, see Framing Plans and Sh. 37.
For details of connection of floorbeam to truss, see Sh. 28.

Location	'D' (b. to L's)
Pier 1	1'-5 7/8"
Pier 2	1'-6 1/16"
Pier 3	1'-6 1/16"
Pier 8	1'-6 1/16"

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5

FLOORBEAM TRUSSES F7
AT PIERS 1, 2, 3, & 8

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 3/8" = 1'-0"
MADE FKD DATE 4-22-54
TRCD. MAM DATE 9-16-54
CKD D.M.D. DATE 9-20-54

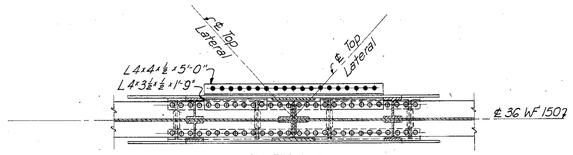
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.33

212

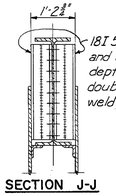
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

32
122

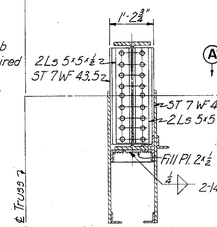
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



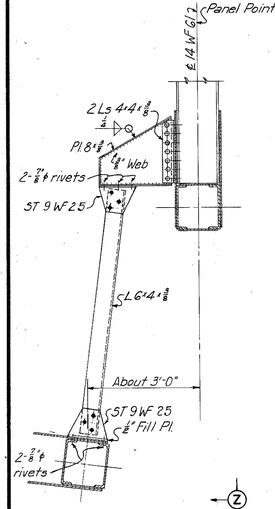
SECTION A-A



SECTION J-J

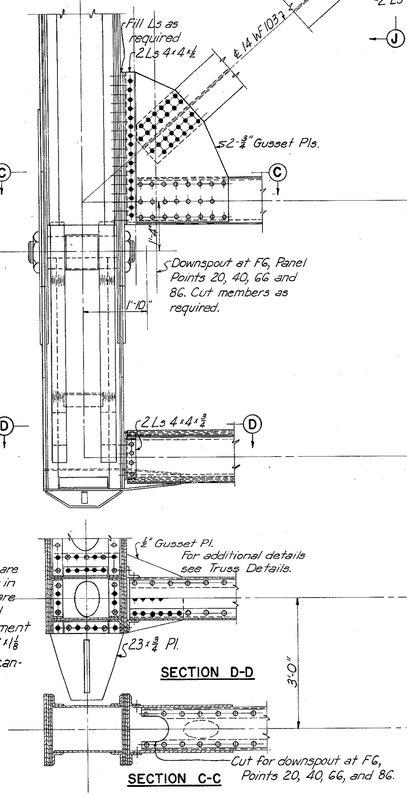


SECTION B-B



SECTION G-G

Note:
Countersunk rivets are for attaching ⅝" gusset in the shop. Open holes are to be drilled or reamed in the field for adjustment of the 23×⅜ Pl. to 8×6×1⅛ guide angles on the cantilever span.

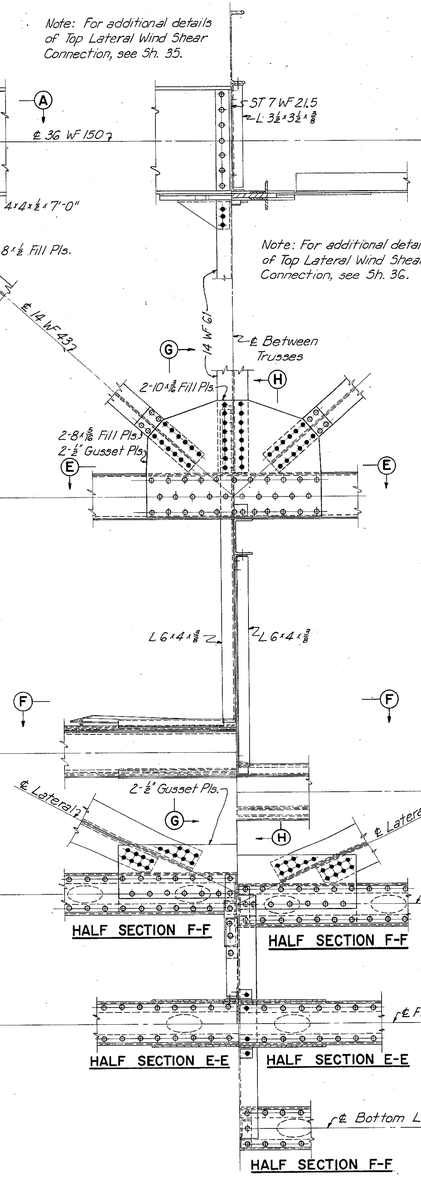


SECTION D-D

SECTION C-C

Strut Sections
2-15L 33.9
2-13×⅜ Pls.
1'-2⅜"
b-b L's

SECTION Z-Z
SECTION Y-Y SIMILAR



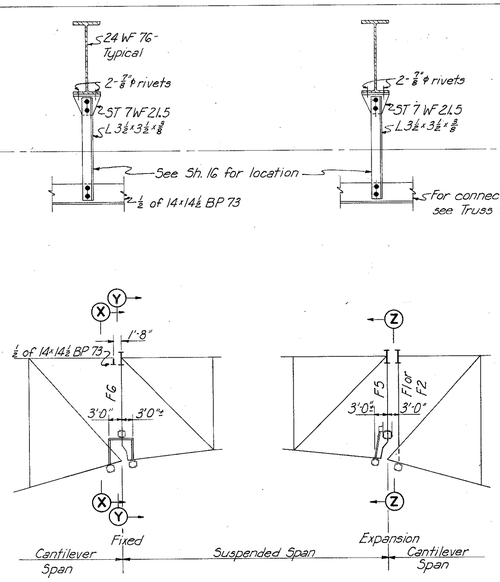
HALF SECTION F-F
HALF SECTION F-F
HALF SECTION E-E
HALF SECTION E-E
HALF SECTION F-F

Strut Sections
2-15L 33.9
2-13×⅜ Pls.
1'-2⅜"
b-b L's

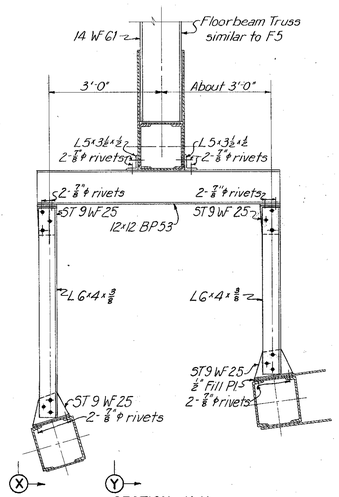
SECTION Z-Z
SECTION Y-Y SIMILAR

Strut Section
2-15L 33.9
2-13×⅜ Pls.
1'-2⅜"

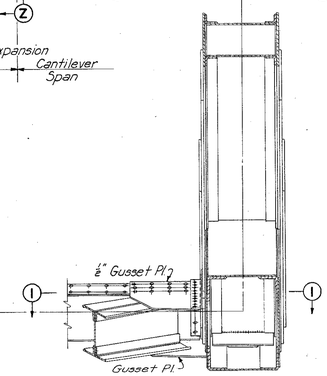
SECTION X-X



LOCATION DIAGRAM
No Scale



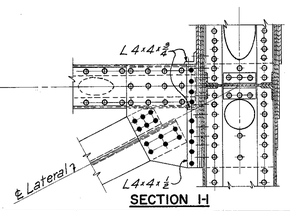
SECTION H-H



Note:
For details of top lateral connections, see Framing Plans and Sh. 36.
For additional details of bottom laterals, see Framing Plans and Sh. 37.
For details of connection of floorbeam to truss, see Sh. 27.

Detail at expansion point
HALF FLOORBEAM TRUSS F5
Typical at Panel Points 28, 48, 60 and 80

Detail at fixed point
HALF FLOORBEAM TRUSS F6
Typical at Panel Points 20, 40, 66 and 86



PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5
FLOORBEAM TRUSSES
F5 AND F6
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ⅜" = 1'-0"
MADE FKD DATE 5-5-54
TRCD. M.A.M. DATE 10-4-54
CKD D.M.D. DATE 10-5-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.32

3/8

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

31
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION G-G

SECTION E-E

Note:
Remove webs of connected members as necessary to provide 2" clearance around 6'-0 W.I. downspout at panel points 110, 303, 315, 503, 515, 703, 715, and 903.

Note:
Remove webs of connected members as necessary to provide 2" clearance around 6'-0 W.I. downspout at panel points 107 and 906.

Note:
For additional details of top lateral connections see Framing Plans and Sh. 35.
For additional details of bottom lateral connections see Framing Plans and Sh. 37.
For details of connection of floorbeam to truss see Sh. 27.

FLOORBEAM TRUSS F4 DETAILS
Typical at panel points 108, 110, 303, 305, 313, 315, 503 505, 513, 515, 703, 705, 713, 715, 903 and 905.

FLOORBEAM TRUSS F3 DETAILS
Typical at panel points 106, 107, 111, 302, 306, 312, 316, 502, 506, 512, 516, 702, 706, 712, 716, 902, 906, and 907.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17 5
FLOORBEAM TRUSSES
F3 AND F4 DETAILS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2"-1'-0"
MADE FKD DATE 4-14-54
TRCD. FKD DATE 9-15-54
CKD. DMD DATE 9-16-54

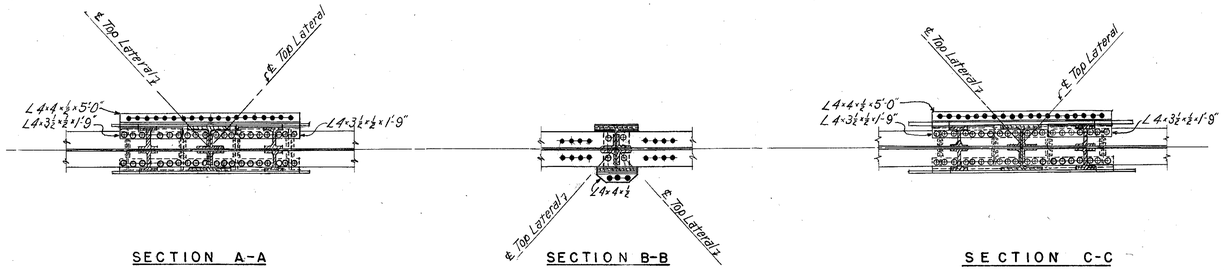
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.31

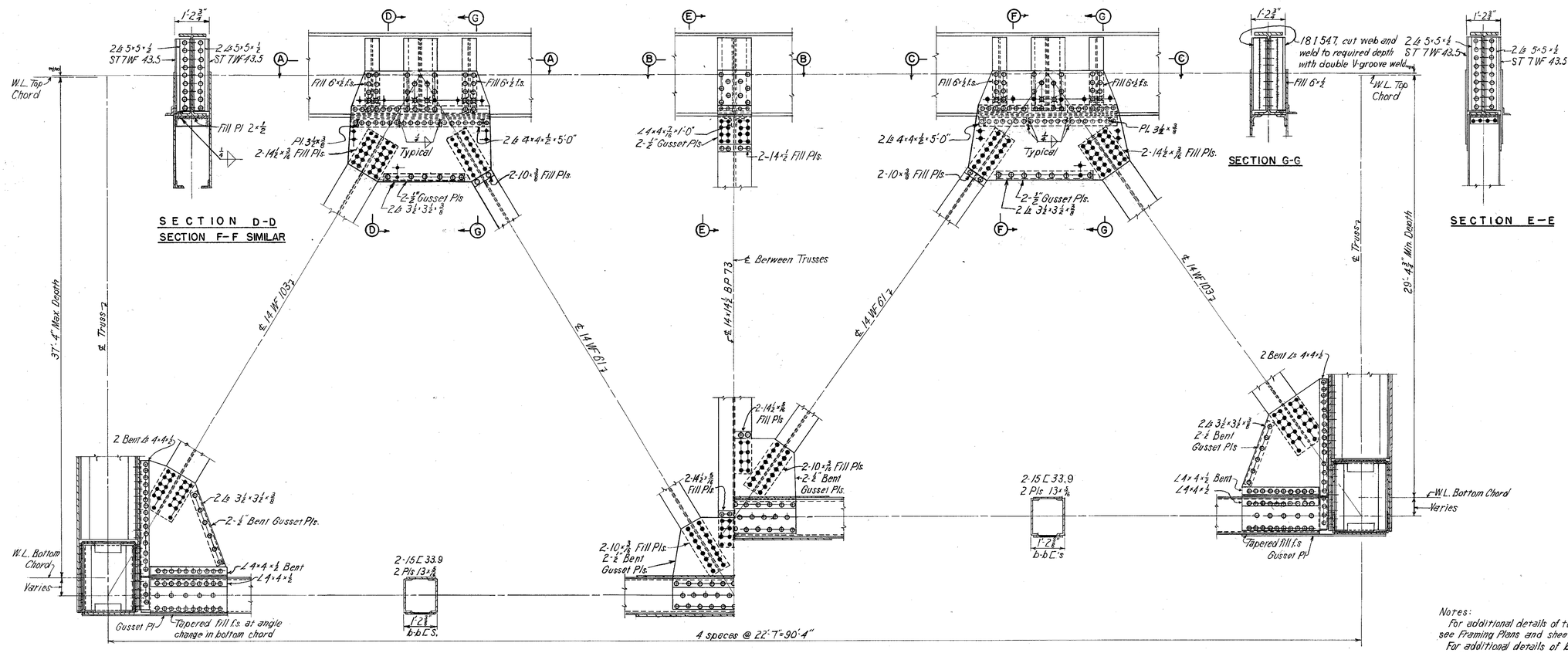
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

30
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



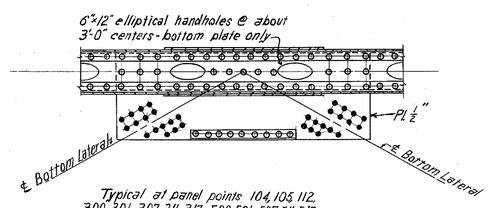
SECTION A-A SECTION B-B SECTION C-C



SECTION D-D
SECTION F-F SIMILAR

SECTION G-G

SECTION E-E



Typical at panel points 104, 105, 112, 300, 301, 307-311, 317, 500, 501, 507-511, 517, 701, 707-711, 717, 901, 908 and 909.

Notes:
For additional details of top lateral connections see Framing Plans and sheet 36.
For additional details of bottom lateral connections see Framing Plans and sheet 37.
For details of connection of floorbeam to truss see sheet 27.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5

FLOORBEAM TRUSS F2 DETAILS

CLEVELAND CUYAHOGA COUNTY OHIO

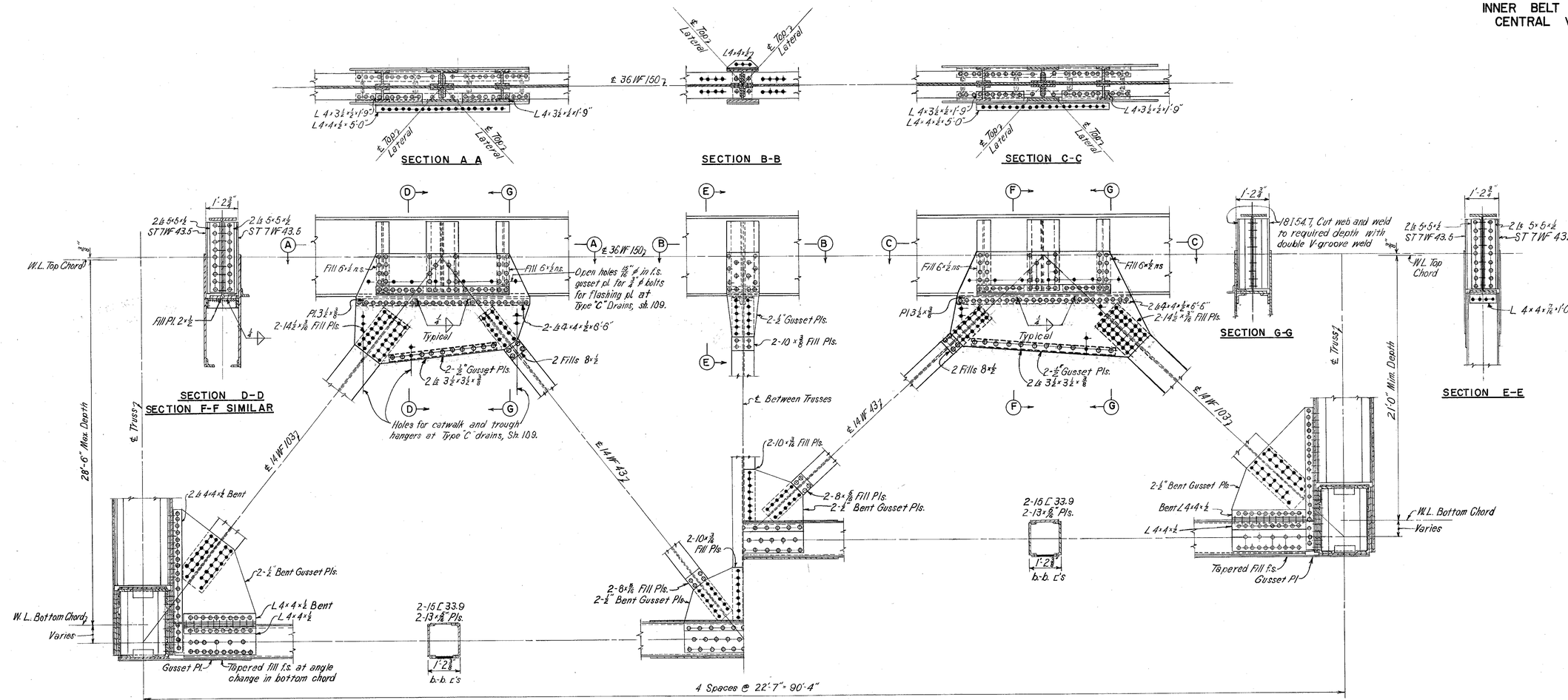
SCALE ½"=1'-0"
MADE FKO DATE 1-7-54
TRCD. JUDY DATE 10-11-54
CKD. DMD DATE 10-18-54

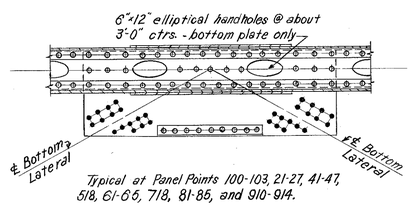
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET-230

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

29
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT





Typical at Panel Points 100-103, 21-27, 41-47, 518, 61-65, 718, 81-85, and 910-914.

Notes:
For additional details of top lateral connections see Framing Plans and sheet 36.
For additional details of bottom lateral connections see Framing Plans and sheet 37.
For details of connection of Floorbeams to truss see sheet 27.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-175

FLOORBEAM TRUSS F1 DETAILS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1/2"=1'-0"
MADE F K D DATE 3-30-54
TRCD W E U DATE 11-9-54
CKD D N D DATE 11-11-54

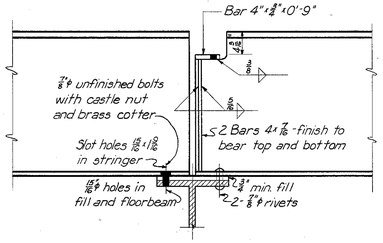
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.29

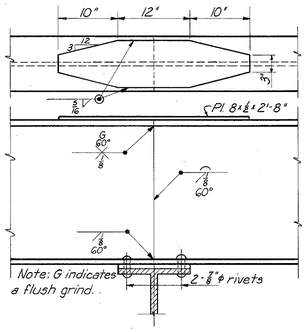
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

28
122

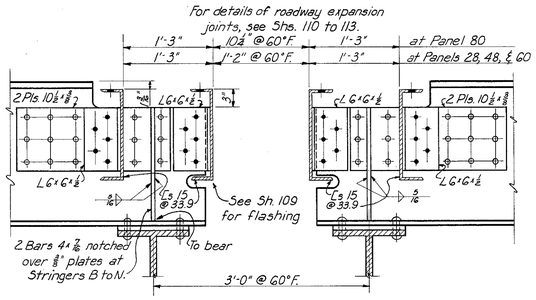
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



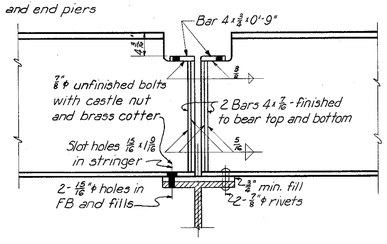
DETAIL AT FLOORBEAM AT TYPE B DRAIN WITH CONTRACTION JOINT
For location, see roadway drainage drawings.



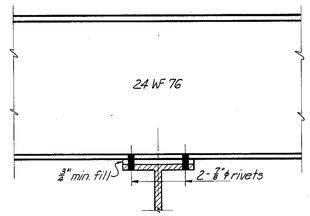
BUTT WELDED JOINT FOR STRINGERS



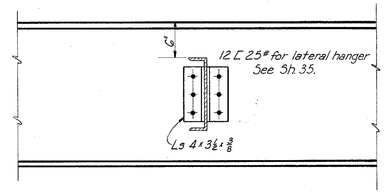
DETAIL AT EXPANSION JOINT



DETAIL AT CONTRACTION JOINT
For location, see stringer joints on Framing Plans. For detail, see Sh. 114.



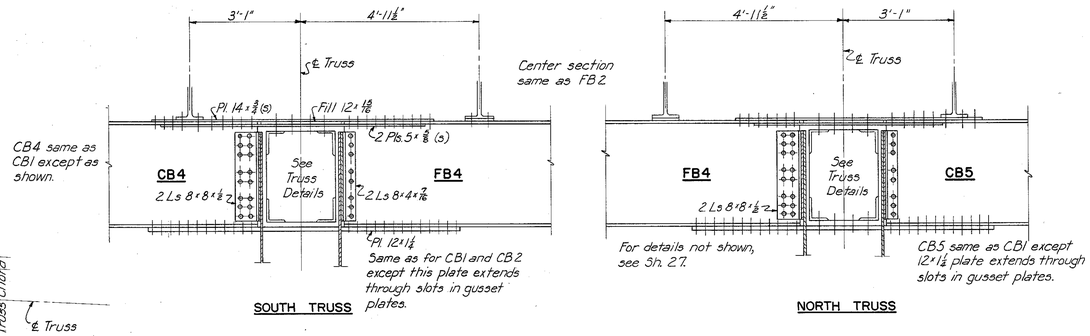
TYPICAL CONNECTION TO FLOORBEAM



LATERAL SUPPORT CONNECTION TO STRINGER

TYPICAL STRINGERS

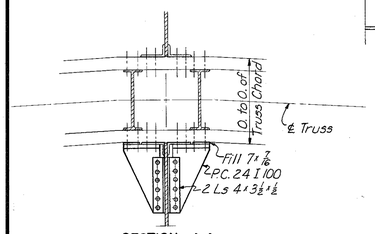
Scale: 1"=1'-0"
All Stringers 24 WF 76#



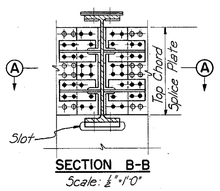
SOUTH TRUSS

NORTH TRUSS

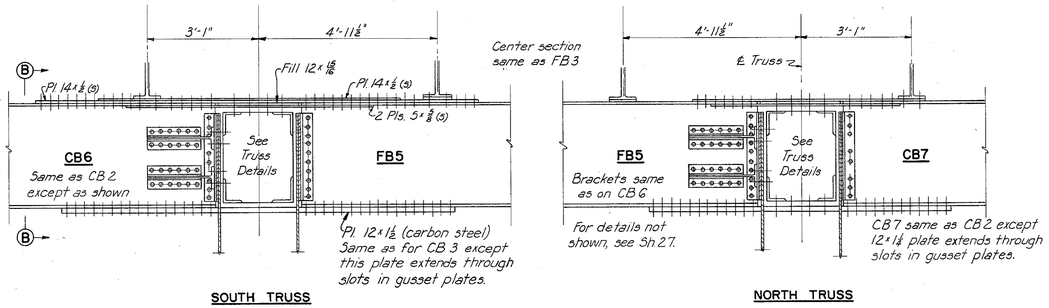
FLOORBEAM FB4
Scale: ½"=1'-0"
Piers 3 and 8



SECTION A-A
Scale: ½"=1'-0"



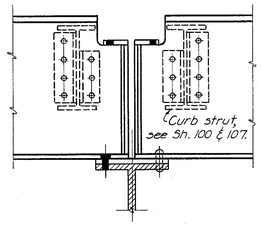
SECTION B-B
Scale: ½"=1'-0"



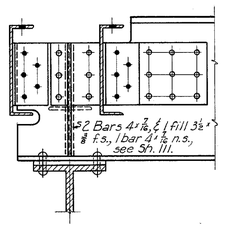
SOUTH TRUSS

NORTH TRUSS

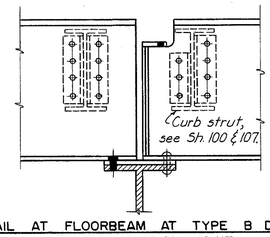
FLOORBEAM FB5
Scale: ½"=1'-0"
Piers 4, 5, 6 & 7



DETAIL AT CONTRACTION JOINT

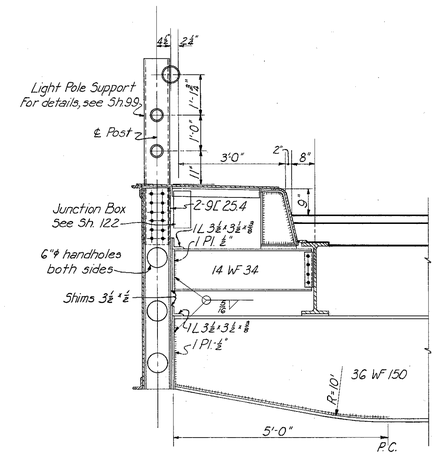


DETAIL AT EXPANSION JOINT



DETAIL AT FLOORBEAM AT TYPE B DRAIN WITH CONTRACTION JOINT

STRINGERS A AND O
Scale: 1"=1'-0"



LIGHT POLE SUPPORT
Scale: ½"=1'-0"
For details not noted, see Sh. 27.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5

FLOORBEAMS AND STRINGERS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE R.L. DATE 7-28-54
TRCD. M.A.M. DATE 9-28-54
CKD. O.M.D. DATE 9-28-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.28

2.28

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

27
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

Subpunch and ream in field for vertical and horizontal adjustment of handrail.

Inside of fascia web

℄ Post

℄ Truss

24 WF 76

36 WF 150

SECTION A-A

4½" 4½" 2½"

1'-1½" 1'-0" 11"

⅝" raised pattern floor plate

⅝" Filler

3'-0" 2" 8" Varies 5'-7" Max. 3'-1" 4'-11½" 8'-0½" 8'-0½" 1'-6½" 6'-6" 8'-0½" 8'-0½" Varies 2'-0"

9"

L 3½×3½×7/16 Conduit Flange

PC 24190

Web

⅝" V

Shim as req.

Curb Strut 14 WF 34

9 ℄ 25.4

5'-8½" b-b Ls

Varies See Notes

CB 2

36 WF 150

See FB 2 & CB

A

Fill 12"×15/16"

Pl. 12"×⅞"

2 Pls. 5"×⅞"

See Truss Details

W.L. top chord

2 Ls 8"×4"×7/16

2 Ls 8"×4"×7/16

R 10'

Pl. 12"×1⅛"

P.C.

Pl. 12"×1¼"

5'-9"

Cut piece from web, bend lower flange and weld.

Mill compression plates to bear

℄ South Truss

57'-2"

7⅞" Slab

2½" Surface Course (not in this contract)

24 WF 76 Typical

⅝" Minimum shims

36 WF 150

See Floorbeam Trusses for details

See Floorbeam trusses for details

℄ Between Trusses

℄ Roadway

Note **Q**-Shop punch holes in channel web, field drill holes in curb strut and cantilever webs.

Note **R**-Provide horizontal slots 13/16"×1 1/16" in curb strut and cantilever webs, and vertical slots 13/16"×1 1/16" in channel webs, for field adjustment. Use permanent ⅞" ϕ bolts with two washers.

HALF SECTION FB 1

⅝" raised pattern floor plate

⅝" Filler

See Note Q

See Note R

3'-0" 2" 8" 3'-7" Maximum 5'-1" on tangent

½" soft steel plate

top of walk plate at fascia

3'-1" 4'-11½" 8'-0½" 8'-0½" 1'-6½" 6'-6" 8'-0½" 6'-0½" (on tangent) 2'-0"

9"

L 3½×3½×7/16 Conduit Flange

PC 24190

Web

⅝" V

Shim as req.

Curb Strut 14 WF 34

2 Ls 4"×3½"×⅜"

9 ℄ 25.4 Notes

See table Sh. 12 for distances from roadway surface to W.L. of top chord where shim is more than ⅜"

normal dist. ⊥ to normal

4'-4½"

1'-6⅝"

CB 1

36 WF 150

W.L. top chord

Fill 12"×15/16"

Pl. 12"×⅞"

2 Pls. 5"×⅞"

See Truss Details

2 Ls 8"×4"×7/16

2 Ls 8"×4"×7/16

1'-5⅛"

℄ 36 WF 150

Pl. 12"×1⅛"

Pl. 12"×1½"

℄ South Truss

Mill compression plates to bear

Compression plates shall be set to extend ½" beyond face of connection angles of cantilever and floorbeam. Where there are exterior web splice plates on the top chord the projection shall be increased by the splice plate thickness.

7½" Slab

2½" Surface Course (not in this contract)

24 WF 76 Typical

⅝" Normal shim on tangent section
⅜" Minimum shims on curved portion of viaduct.

See Floorbeam Trusses for details

See Floorbeam Trusses for details

℄ Roadway and ℄ between Trusses

HALF SECTION FB 2

Fascia See Sh. 100

⅝" raised pattern floor plate

⅝" Filler

3'-0" 2" 8" Varies 5'-7" Minimum 3'-1" 4'-11½" 8'-0½" 8'-0½" 1'-6½" 6'-6" 8'-0½" Varies 2'-0" Varies

9"

L 3½×3½×7/16 Conduit Flange

PC 24190

Web

⅝" V

Shim as req.

Curb Strut 14 WF 34

CB 3

36 WF 150

B

See FB 2 & CB 1

Fill 12"×15/16"

Pl. 12"×⅞"

2 Pls. 5"×1"

See Truss Details

W.L. top chord

2 Ls 8"×4"×7/16

2 Ls 8"×4"×7/16

Pl. 12"×1½"

Pl. 12"×1½"

Mill compression plates to bear

℄ South Truss

57'-2"

7½" Slab

2½" Surface Course (not in this contract)

24 WF 76 Typical

¾" Minimum shims

36 WF 150

See Floorbeam Trusses for details.

℄ Roadway

℄ Between Trusses

HALF SECTION FB 3

Notes:
Depth of ends of floorbeams varies with the thickness of shims under stringers. For each unit cut floorbeam end to a depth that will make its bottom flange flush with bottom of fascia beam at the panel point with the largest shim under stringers.

Notes: Where the angle between the floorbeam or curb strut and a normal to the fascia web is more than ⅛" in 12" the flange of the 9" channel stiffener shall be bent parallel to the fascia web except at light pole supports.
At light pole supports (Sh. 28) the stiffener channels shall be set normal to the fascia web and the ends of floorbeams and curb struts shall be beveled as required.

24 WF 76

36 WF 150

SECTION B-B

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17 5

FLOORBEAMS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½"-1'-0"
MADE L.W.L. DATE 1-28-54
TRCD. N.A.M. DATE 9-21-54
CKD. D.M.D. DATE 9-22-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.27

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FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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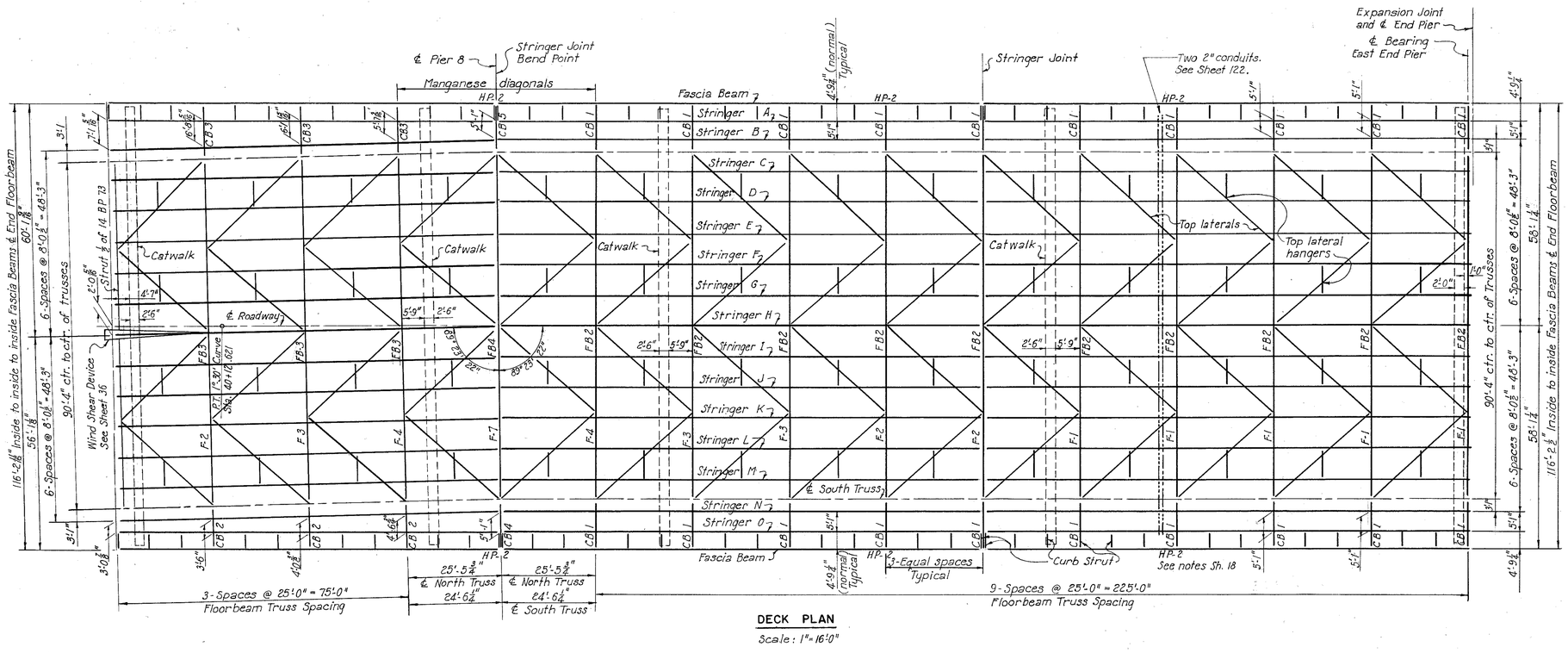
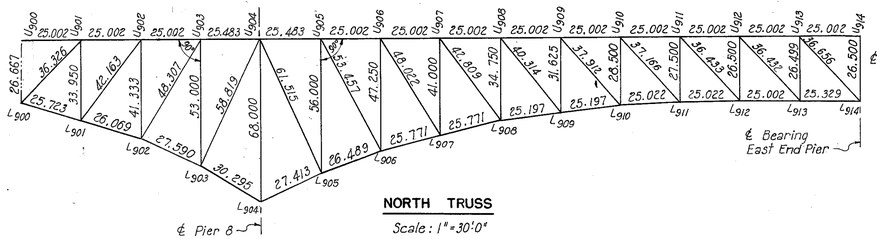
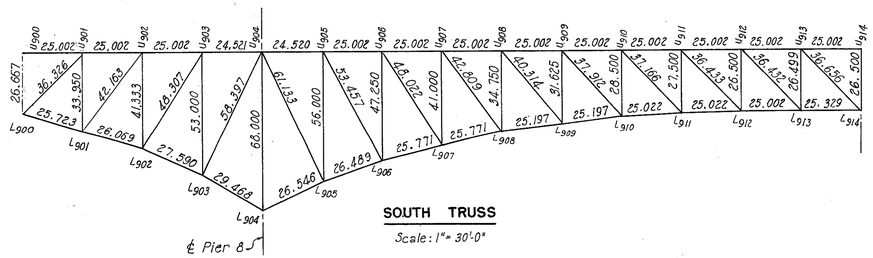
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



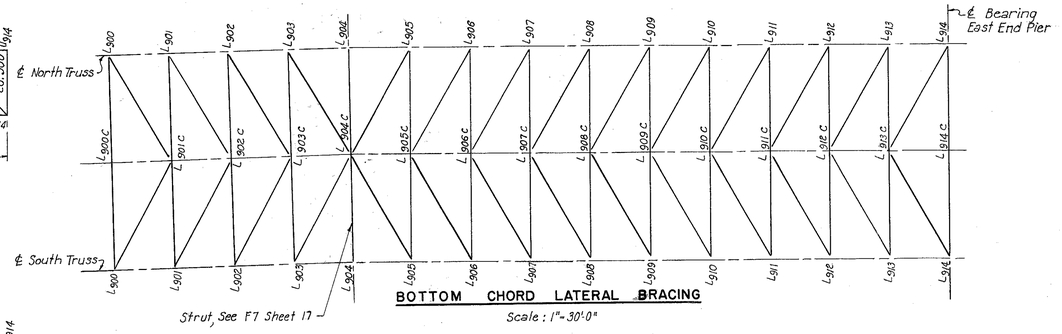
DECK PLAN



NORTH TRUSS
Scale: 1"=30'-0"



SOUTH TRUSS
Scale: 1"=30'-0"



BOTTOM CHORD LATERAL BRACING
Scale: 1"=30'-0"

Top laterals ½ of 12 BP 53#, carbon steel unless noted.
Bottom laterals 4 bulb Ls 8 x 3½ x 16.0# and web Pl. 15 x 5/16
Stringers 24 WF 76#
Floorbeams 36 WF 150#
Bottom lateral struts 2 Cs 15 x 33.9 - 2 Pls. 13 x 5/16 unless noted.
For the distance from the roadway surface to the working line of the truss top chord, see the table of Grades and Elevations Sheet 12.
For truss sections and details, see Sheets 89 to 94 inclusive.
Posts at piers and at ends of unit are vertical; other posts are normal to top chord.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5

FRAMING PLAN - UNIT 9

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE J.F.G. DATE 1-21-54
TRCD. J.D.H. DATE 2-17-54
CKD. D.M.D. DATE 9-29-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.26

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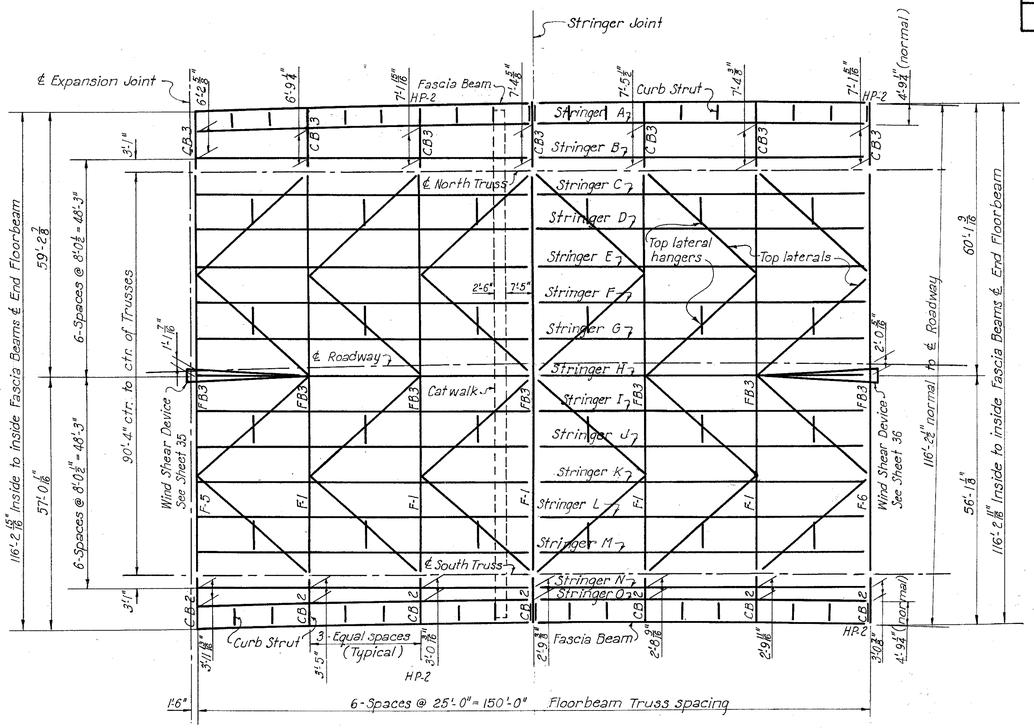
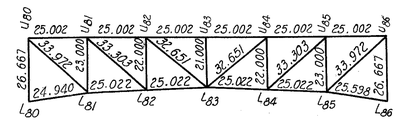
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

25
122

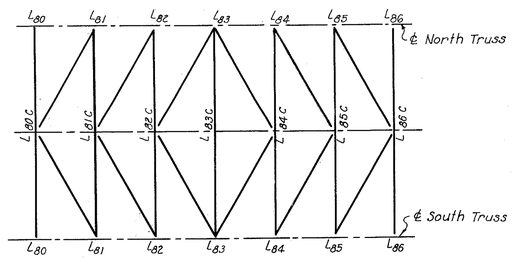
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



DECK PLAN
Scale : 1" = 16'-0"



TRUSSES
Scale : 1" = 30'



BOTTOM CHORD LATERAL BRACING
Scale : 1" = 30'-0"

Top laterals ½ of 12 BP 53 #
Bottom laterals 4 bulb ls 8 x 3½ x 16.0 # - Web ft. 15 x 3/8 .
Stringers 24 WF 76 #
Floorbeams 36 WF 150 #
Bottom lateral struts 2 L 15 x 33.9 # - 2 ft 8 in. 13 x 5/16
For details of north truss , see Sheet 78 for Unit 6.
For details of south truss , see Sheet 79 for Unit 6.
Sections are identical to trusses of Unit 6 , and details will be similar except as modified by lengths of members in end panels , and vertical bend points in trusses of Unit 6 at U62 and U64.
For the distance from the roadway surface to the working line of the truss top chord, see the table of Grades and Elevations, Sheet 12.
For truss sections and stresses, see the Stress sheet for Unit 8, Sheet 88.
Posts at ends of units are vertical ; other posts are normal to the top chord.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5

FRAMING PLAN – UNIT 8

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE J.J.G.S. DATE 1-14-54
TRCD G.K. FAH. DATE 8-17-54
CKD. D.M.D. DATE 9-29-54

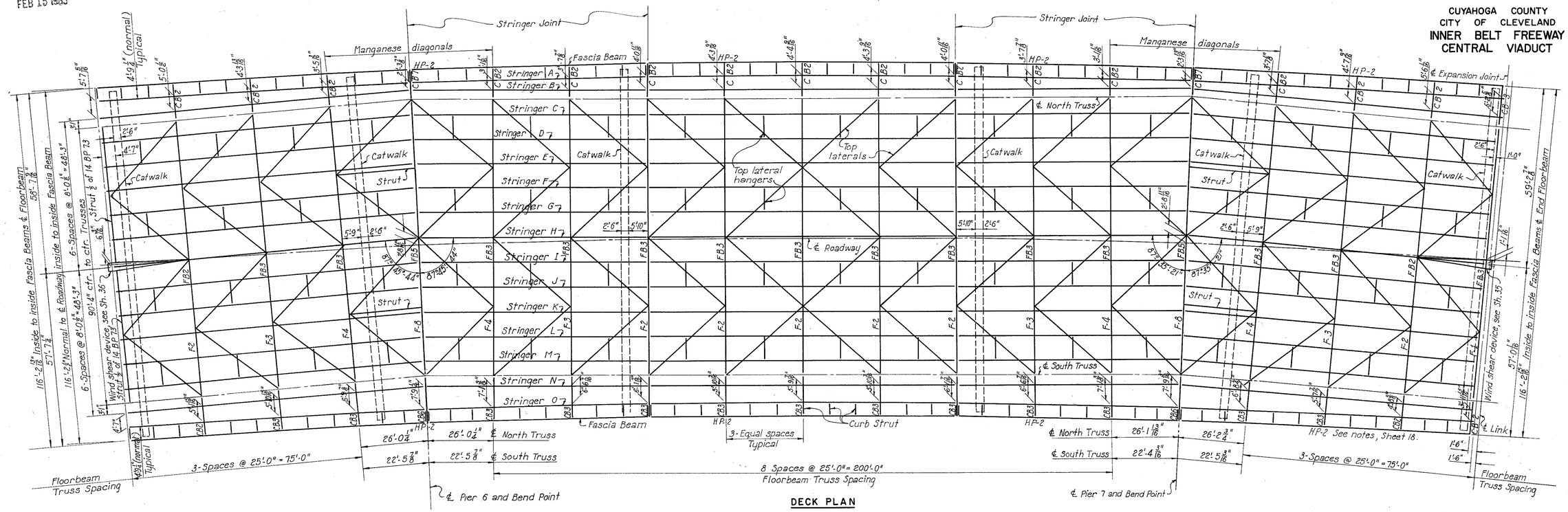
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.25

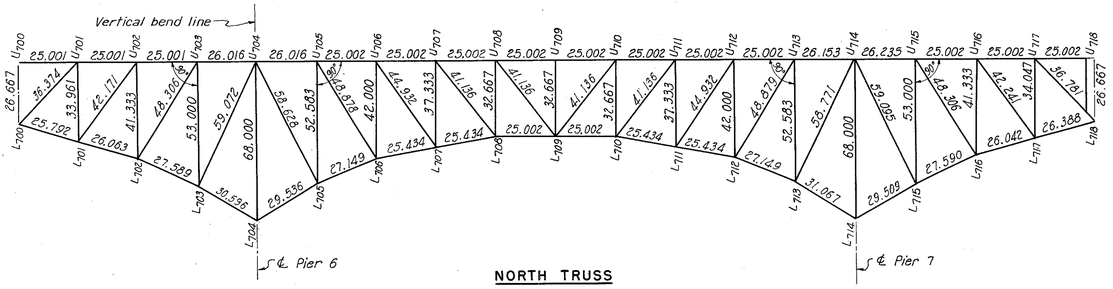
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

24
122

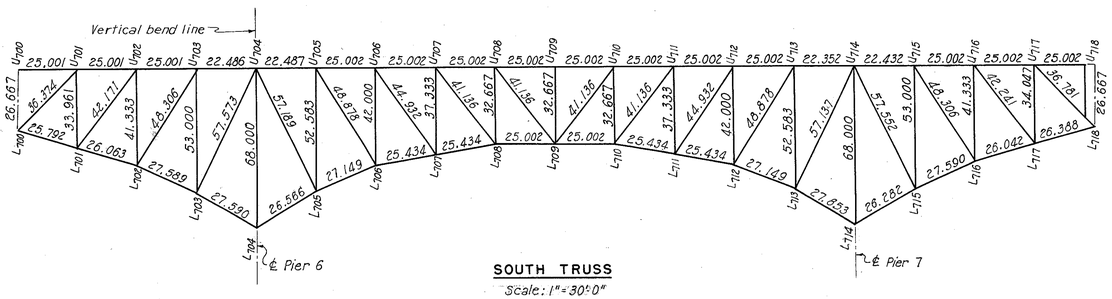
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



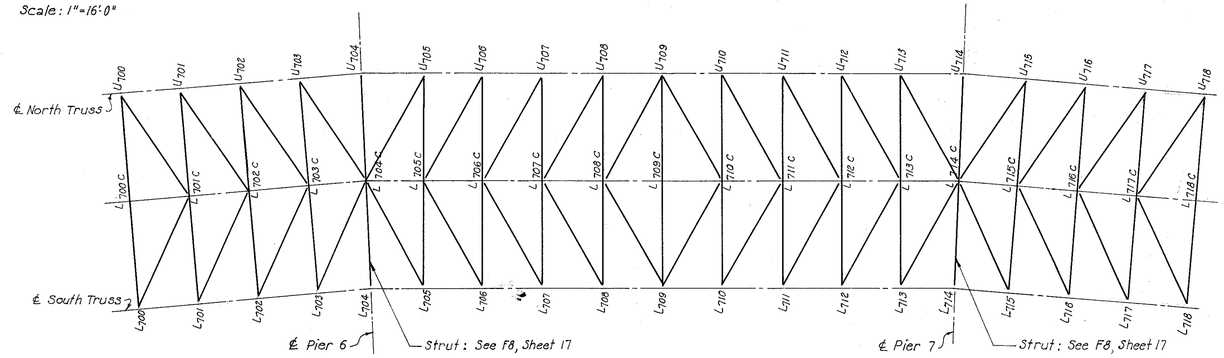
DECK PLAN
Scale: 1" = 16'-0"



NORTH TRUSS
Scale: 1" = 30'-0"



SOUTH TRUSS
Scale: 1" = 30'-0"



BOTTOM CHORD LATERAL BRACING
Scale: 1" = 30'-0"

Top laterals and struts ½ of 12 BP 53# carbon steel unless noted.
Bottom laterals 4 bulb L 8 x 3½ x 16.0# - web PL 15 x 5/16 stock
Stringers 24 WF 76#
Floorbeams 36 WF 150#
Bottom lateral struts 2 L 15 x 33.9# - 2 PLs. 13 x 5/16 stock unless noted.
For the distance from the roadway surface to the working line of the truss top chords at each panel point, see the table of Grades and Elevations on Sheet 12.
For truss sections and details see Sheets 80 to 87 inclusive.
Posts at piers and at ends of unit are vertical; other posts are normal to top chord.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5

FRAMING PLAN - UNIT 7

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As Shown
MADE NAM DATE
TRCD AH DATE 7-26-54
CKD P.M.D DATE 9-27-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.24

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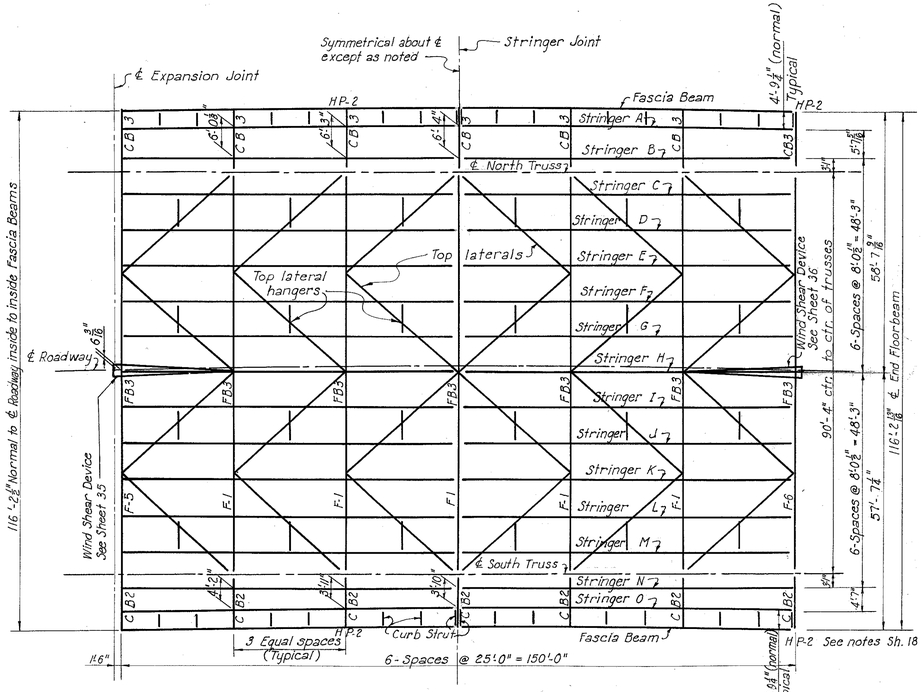
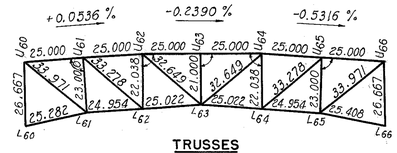
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

23
122

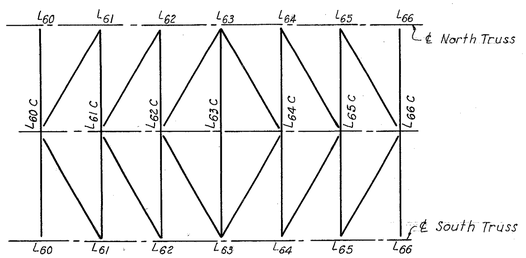
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



DECK PLAN
Scale: 1" = 16'-0"



TRUSSES
Scale: 1" = 30'-0"
Angles marked thus ∟ are 90°.



BOTTOM CHORD LATERAL BRACING
Scale: 1" = 30'-0"

Top laterals ½ of 12 BP 53 #
Bottom laterals 4 bulb ⊑ 8 x 3½ x 16.0 #-1 web ⊑ 15 x ⅜
Stringers 24 WF 76 #
Floorbeams 36 WF 150 #
Bottom lateral struts 2 ⊑ 15 x 33.9 - 2-Pls. 13 x ⅝
For the distance from the roadway surface to the working line of the truss top chords at each panel point, see the table of Grades and Elevations, Sheet 12.
For truss sections and details see Sheets 77 to 79 inclusive.
Posts at ends of unit are vertical; other posts are normal to top chord as shown.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5

FRAMING PLAN - UNIT 6

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE R. K. DATE 7-12-54
TRCD G.F.H. DATE 8-13-54
CKD D.M.D. DATE 9-30-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.23

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

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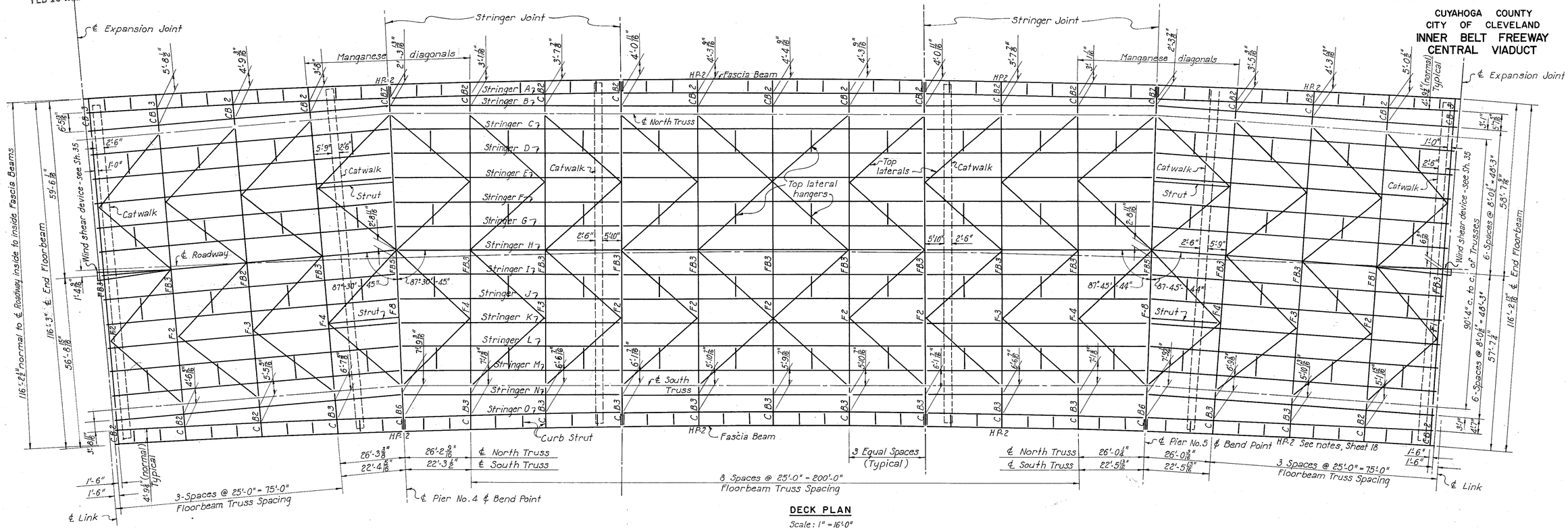
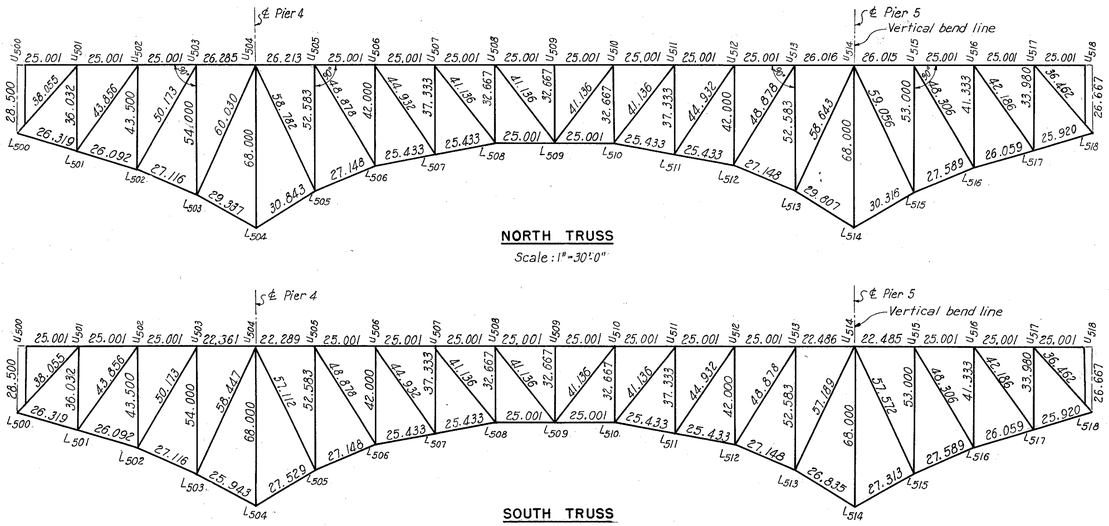
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



DECK PLAN

Scale: 1" = 16'-0"

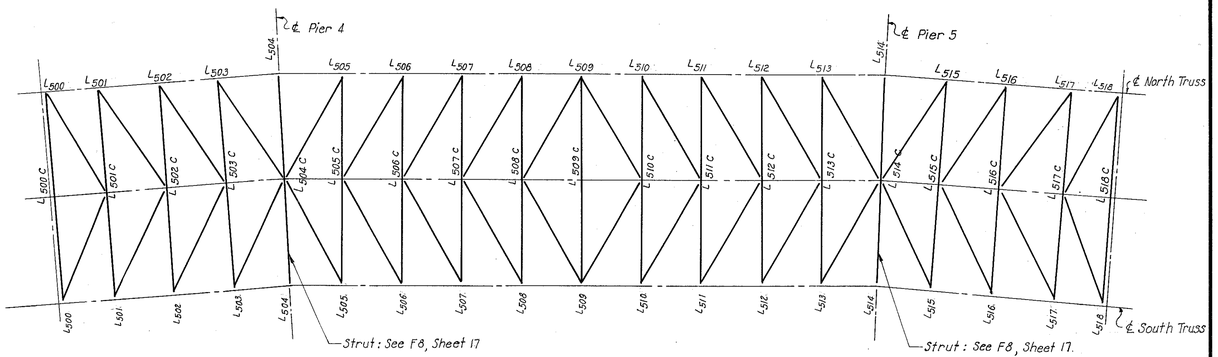


NORTH TRUSS

Scale: 1" = 30'-0"

SOUTH TRUSS

Scale: 1" = 30'-0"



BOTTOM CHORD LATERAL BRACING

Scale: 1" = 30'-0"

Top laterals ⅛ of 12 BP 53 #- carbon steel unless noted.
Top lateral struts ⅛ of 12 BP 53 #- c
except wind shear devices.
Bottom laterals 4 Bulb L 8 x 3½ x 16 #- Web ½ 15 x ⅜
Stringers 24 WF 76 #
Floorbeams 36 WF 150 #
Bottom lateral struts : 2 ⊏ 15 x 33.9 - 2 ⊏s 13 x ⅝ unless noted.
For the distance from the roadway surface to the working line of the truss top chord at each panel point, see the table of Grades and Elevations, Sheet 12.
For truss sections and details see Sheets 63 to 76 inclusive.
Posts at piers and at ends of unit are vertical; other posts are normal to top chord.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5

FRAMING PLAN - UNIT 5

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE LIB DATE 1-19-54
TRCD. A.H. DATE 7-22-54
CKD. D.M.D. DATE 9-27-54

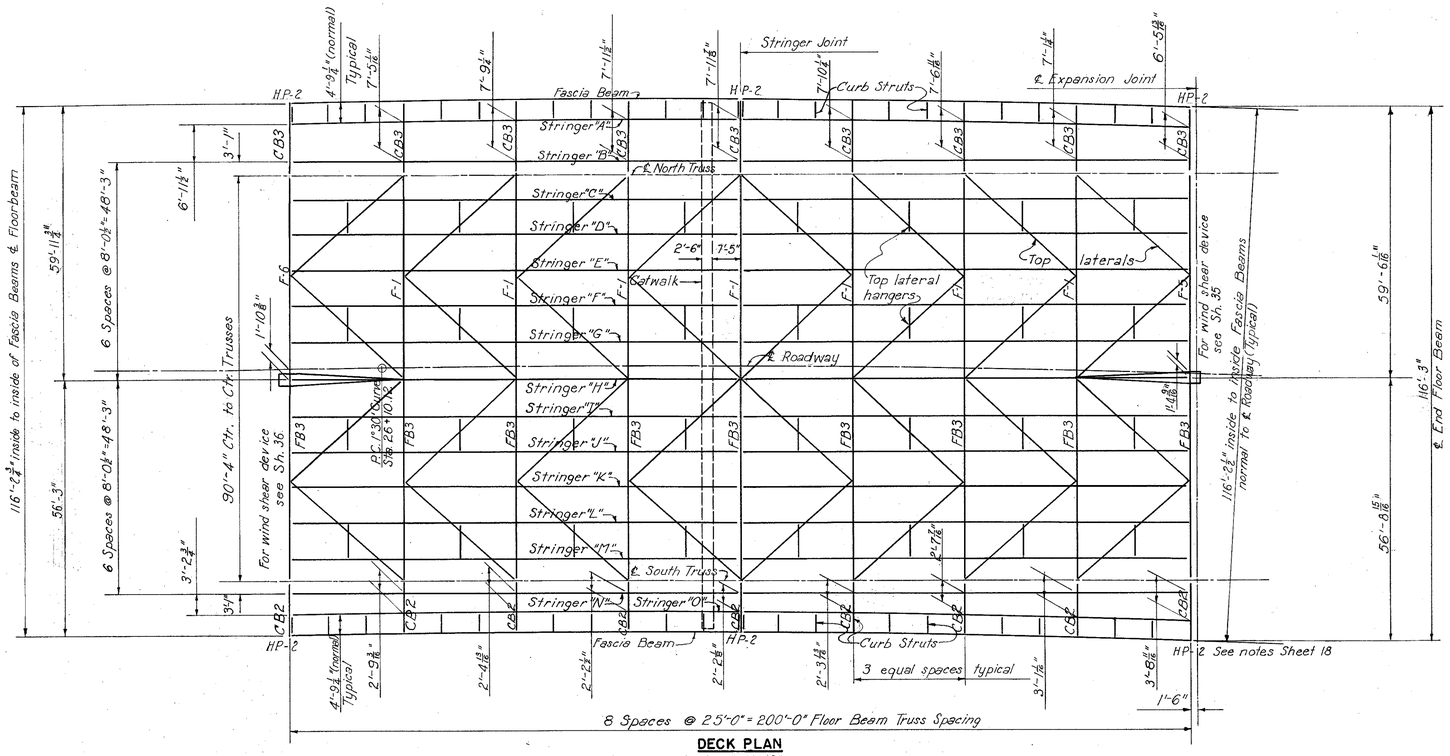
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.22

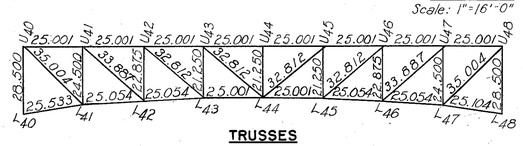
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

21
122

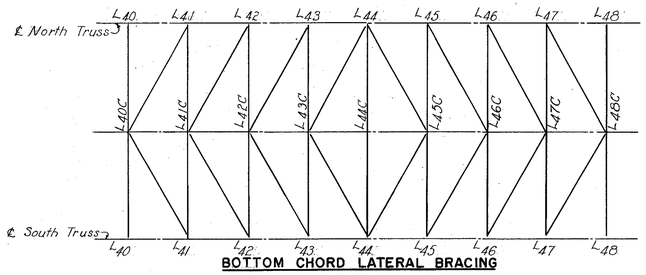
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



DECK PLAN
Scale: 1" = 16'-0"



TRUSSES
Scale: 1" = 30'-0"



BOTTOM CHORD LATERAL BRACING
Scale: 1" = 30'-0"

All top laterals ½ of 12 BP 53#
Bottom laterals 4 bulb ℄ 8 x 3½ x 16.0# - Web Pl. 15 x ⅜
Stringers 24 WF 76#
Floorbeams 36 WF 150#
Bottom lateral struts: 2 ℄ 15 x 33.9 - 2 Pls. 13 x 7/16
For the distance from the roadway surface to the working line of the truss top chord at each panel point, see the table of Grades and Elevations, Sh. 12.
For truss sections and details see Sheets 58 to 62 inclusive.
Posts at ends of unit are vertical; other posts are normal to top chord.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5

FRAMING PLAN - UNIT 4

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE as shown
MADE L.L.D. DATE
TRCD D.J.R. DATE 6-8-54
CKD. D.M.D. DATE 9-30-54

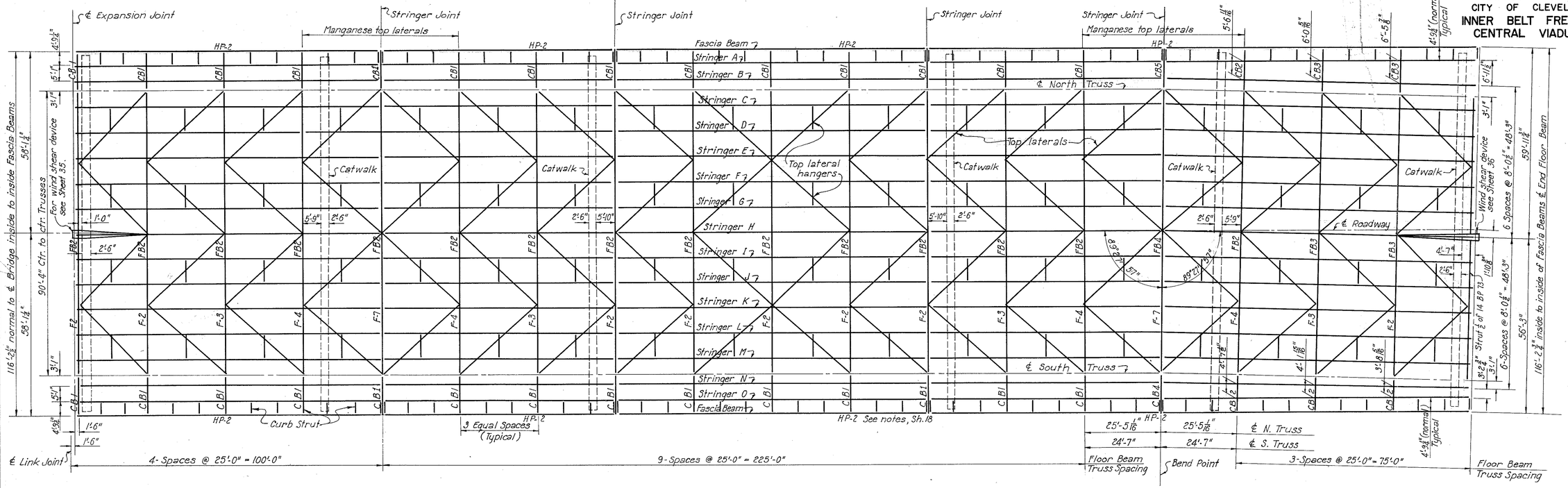
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.21

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

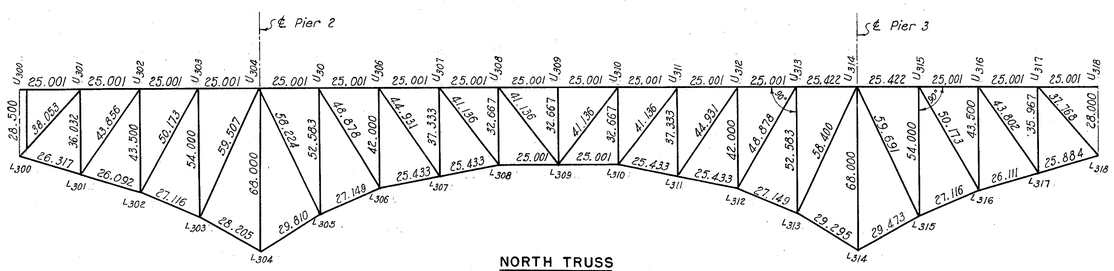
20
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

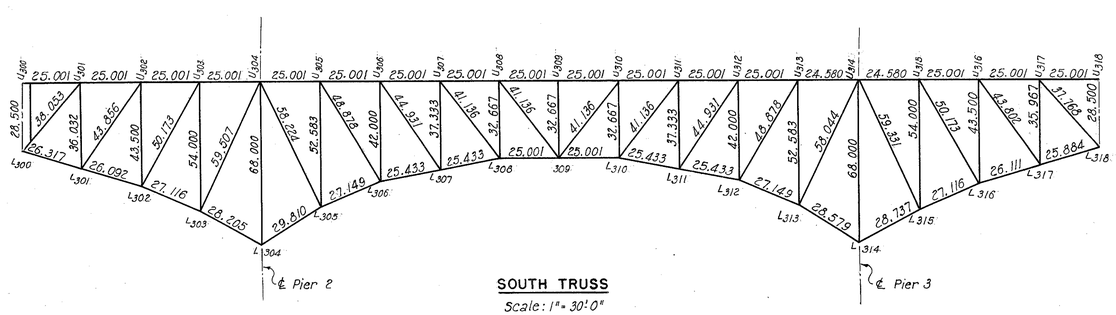


PIER 2 PIER 3

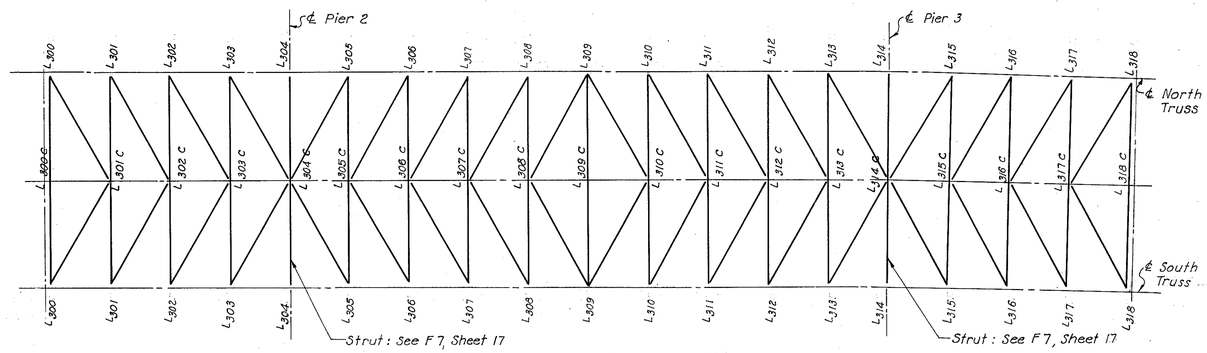
DECK PLAN
Scale: 1" = 16'-0"



NORTH TRUSS
Scale: 1" = 30'-0"



SOUTH TRUSS
Scale: 1" = 30'-0"



BOTTOM CHORD LATERAL BRACING
Scale: 1" = 30'-0"

All top laterals carbon steel unless noted. ½ of 12 BP 53.
Bottom laterals 4 bulb L's 8 x 3½ x 16.0 #-web 15 x 5/8 PL.
Stringers 24 WF 76 #.
Floorbeams 36 WF 150 #.
Top lateral struts ½ of 14 BP 73 #.
Bottom lateral struts 2 L's 15 x 3 3.9 - 2 PLs. 13 x 5/16 unless noted.
For the distance from the roadway surface to the working line of the truss top chord at each panel point, see the table of Grades and Elevations Sheet 12.
For truss sections and details, see Sheets 47 to 57 inclusive.
Posts at piers and at ends of unit are vertical; other posts are normal to top chord.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

FRAMING PLAN - UNIT 3

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE I.W.L. DATE 1-18-54
TRCD. A.H. DATE 7-19-54
CKD. D.M.D. DATE 9-28-54

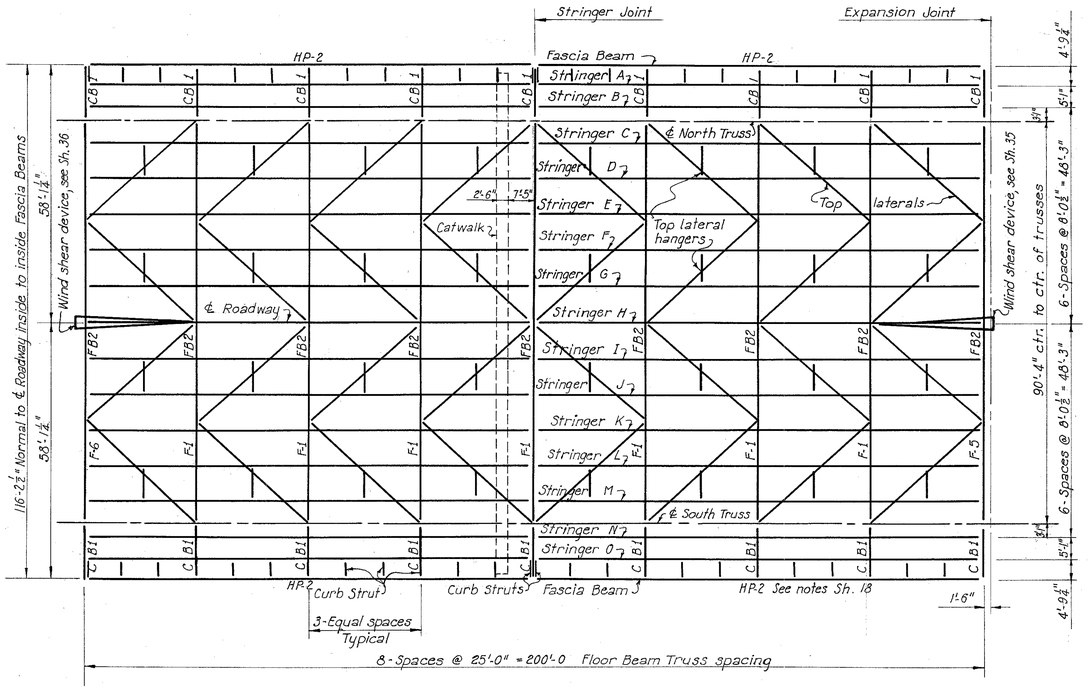
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.20

216

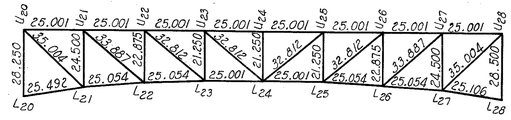
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

19
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

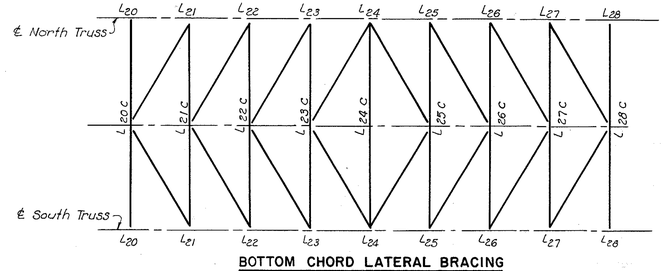


DECK PLAN
Scale: 1/16" = 1'-0"



TRUSSES
Scale: 1" = 30'-0"

Top laterals ½ of 12 BP 53 #
Bottom laterals 4 bulb ℄s 8 x 3½ x 16.0 # - web PL .15 x ⅜.
Stringers 24 WF 76 #
Floorbeams 36 WF 150 #
Bottom lateral struts 2 ℄s 15 x 33.9 - 2 PLs. 13 x 5/16.
Working line of truss top chord is 4'-4½" below roadway surface. See the table of grades and Elevations, Sheet 12.
For truss sections and details, see Sheets 44 to 46
Posts at ends of unit are vertical; other posts are normal to top chord.
For typical top lateral hanger, see Sheets 28 and 35.



BOTTOM CHORD LATERAL BRACING
Scale: 1" = 30'-0"

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5

FRAMING PLAN — UNIT 2

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE J.F.G. DATE 1-14-54
TRCD. G.K.&H. DATE 7-21-54
CKD. P.M.D. DATE 9-30-54

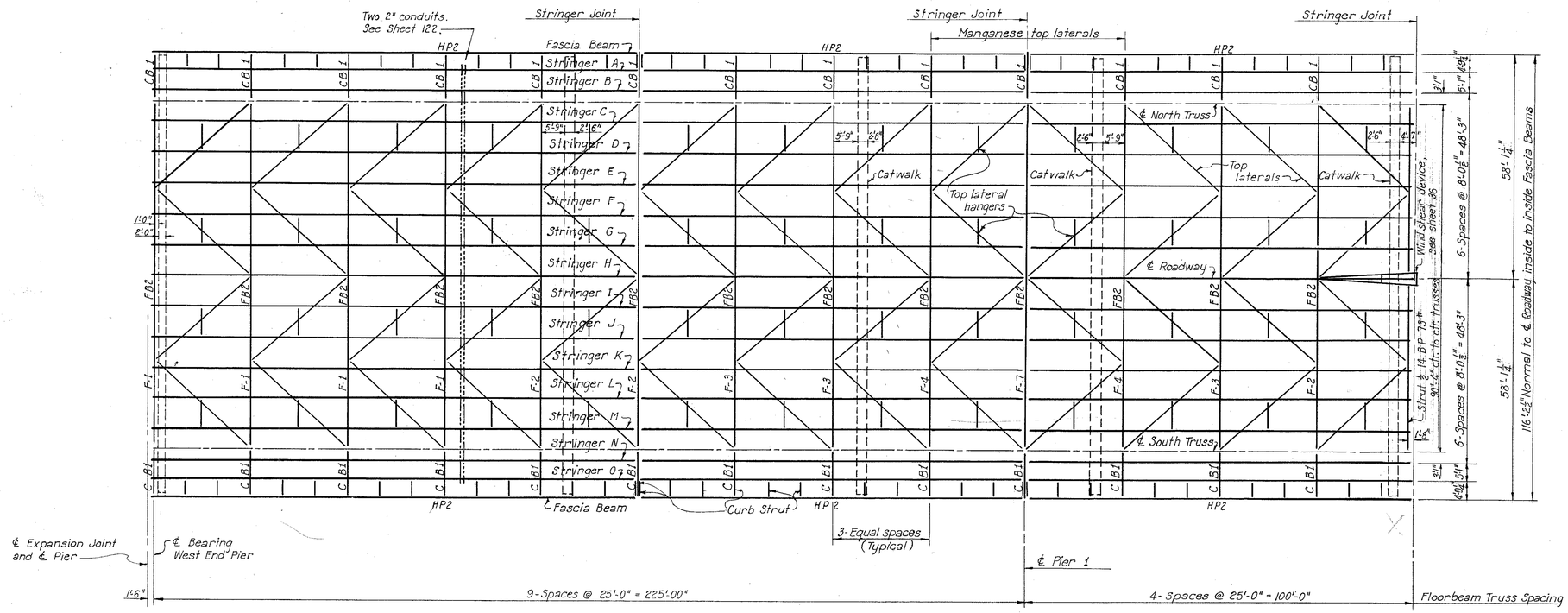
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.19

215

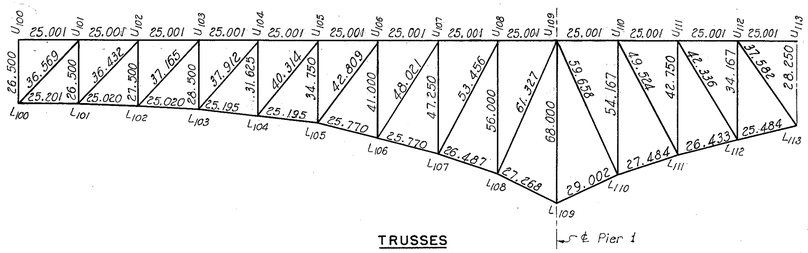
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

18
122

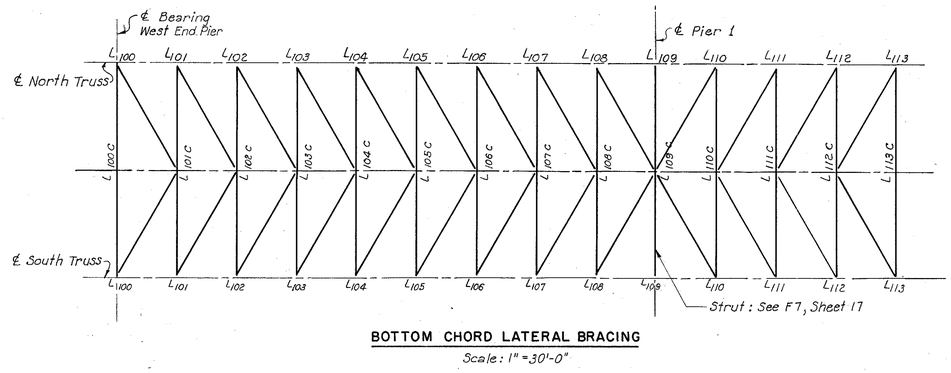
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



DECK PLAN
Scale: 1/16" = 1'-0"



TRUSSES
Scale: 1" = 30'-0"



BOTTOM CHORD LATERAL BRACING
Scale: 1" = 30'-0"

For 15" channel framing at expansion joints see Roadway Expansion Joints.
For 13" channel framing at contraction joints see Roadway Drains Type B and Slab Plans.

Top laterals ½ of 12 BP 53 #, carbon steel unless noted.
Bottom laterals 4 bulb L8 8x3½x16.0 #-Web Pl. 15x⅜
Stringers 24 WF 76 #
Floorbeams 36 WF 150 #
Bottom lateral struts 2 L 15x33.9-2 Pl.s. 13x⅝ unless noted.
The working line of the truss top chord is 4'-4½" below the roadway surface. See the table of Grades and Elevations, Sheet 12.
For truss sections and details, see Sheets 38 to 43 inclusive.
Posts at piers and at ends of unit are vertical; other posts are normal to top chord.
Handrail posts to be located at floorbeams and at third points between floorbeams. Posts not marked HP-2 (light pole support) will be HP-1. See Sheet 99.
For typical top lateral hanger, see Sheets 28 and 35.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CUY - 42R-17.5

FRAMING PLAN - UNIT 1

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE As shown
MADE W.F.G. DATE 1-19-54
TRCD. J.P.B. R.H. DATE 7-28-54
CKD. D.M.D. DATE 9-24-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

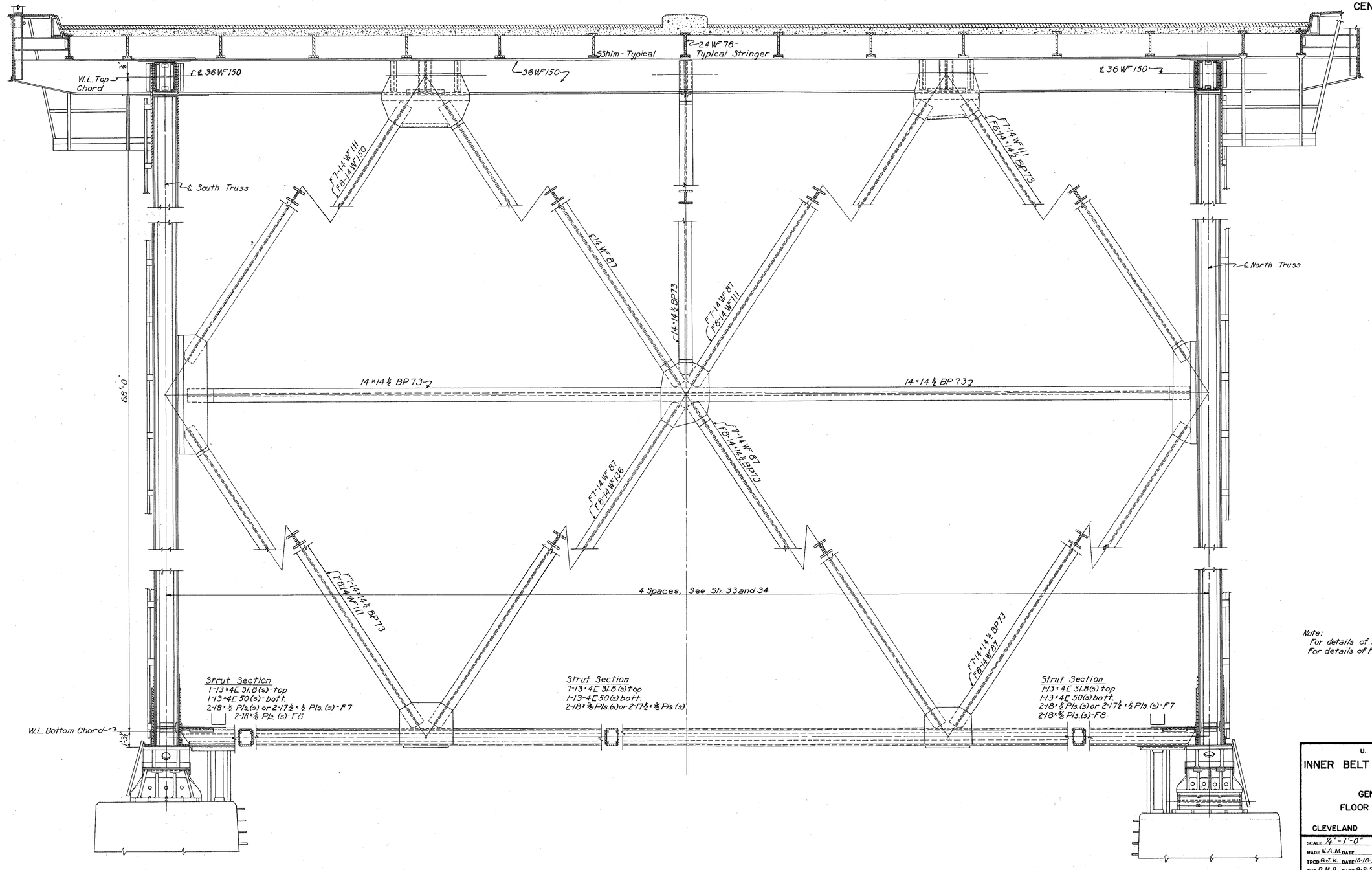
914-1A SHEET 2.18

214

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

17
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



Note:
For details of Floorbeam Truss F7 see Sh. 33.
For details of Floorbeam Truss F8 see Sh. 36.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5
GENERAL CROSS SECTION
FLOOR BEAM TRUSSES F7 & F8

CLEVELAND CUYAHOGA COUNTY OHIO

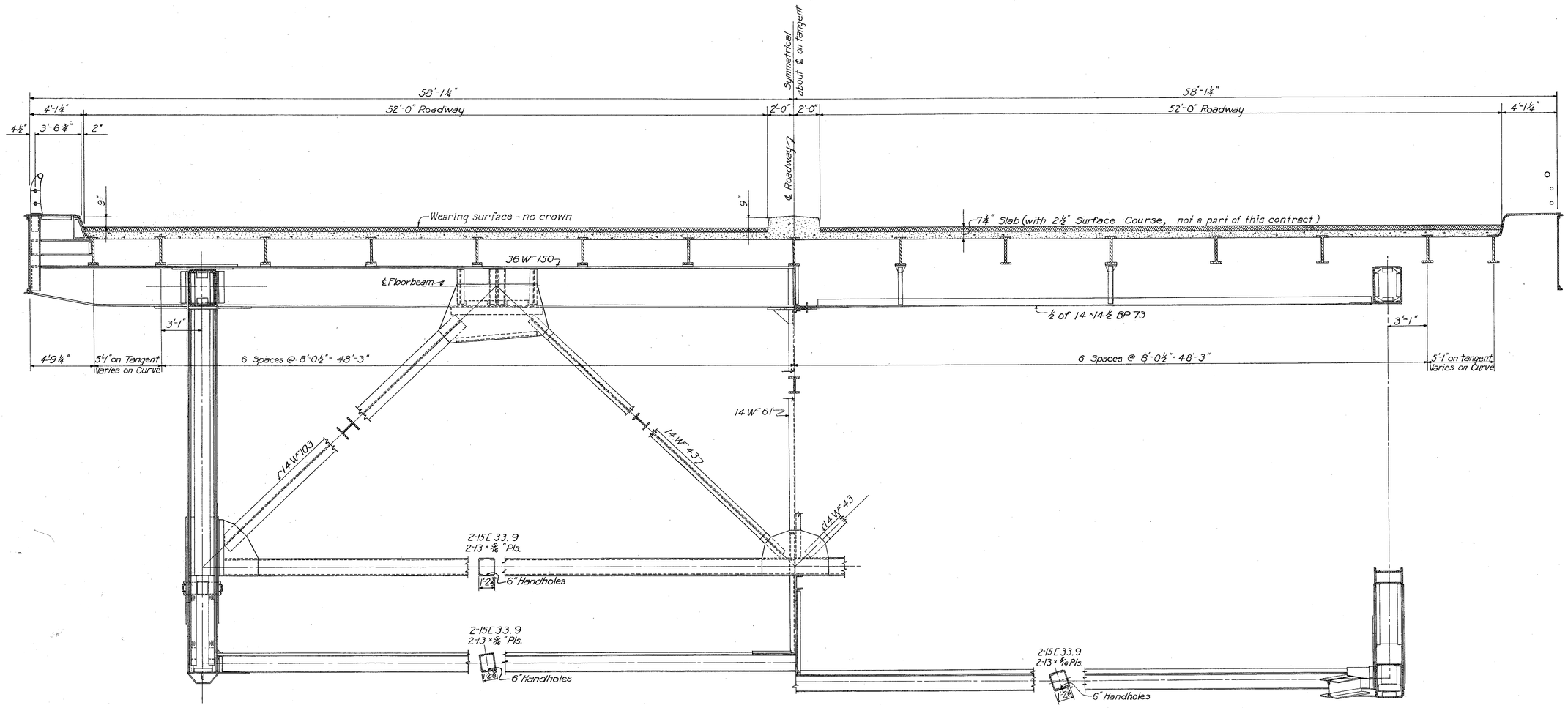
SCALE 1/4" = 1'-0"
MADE N.A.M. DATE
TRCD G.J.K. DATE 10-18-54
CKD. D.M.D. DATE 9-2-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.17

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

16
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



HALF SECTION F5

HALF SECTION F6

Note:
For details of Floorbeam Trusses F5 & F6 see Sh.32.
For location of Floorbeam Trusses see Framing Plans.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

GENERAL CROSS SECTION
FLOOR BEAM TRUSSES F5 & F6

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ¼" = 1'-0"
MADE NAM DATE
TRCD GJK DATE 10-9-54
CKD DMD DATE 9-2-54

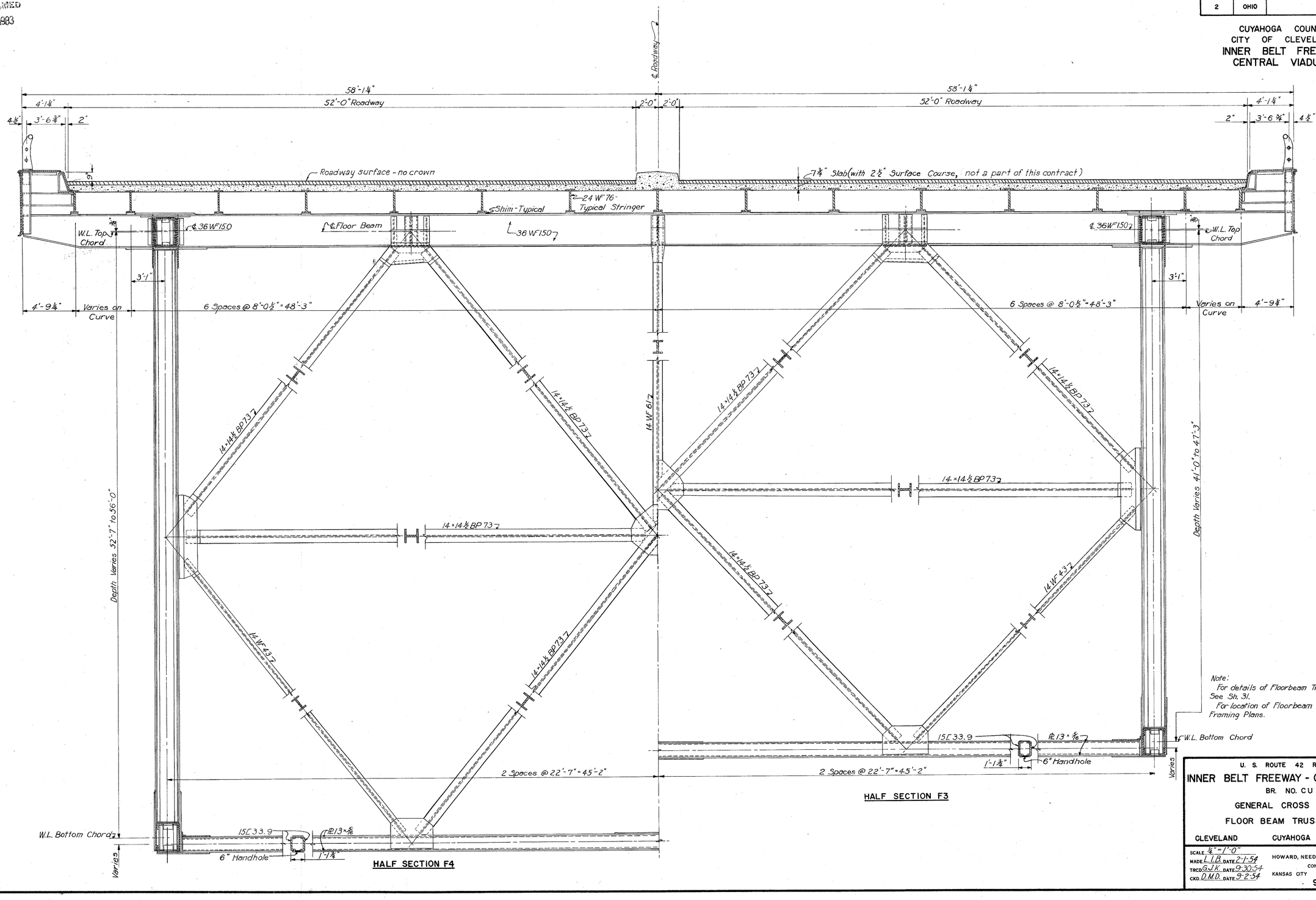
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.16

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

15
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



HALF SECTION F4

HALF SECTION F3

Note:
For details of Floorbeam Trusses F3 & F4 See Sh. 31.
For location of Floorbeam Trusses see Framing Plans.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU 42 R 17.5
GENERAL CROSS SECTION
FLOOR BEAM TRUSSES F3 & F4
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE ½" = 1'-0"
MADE L.I.B. DATE 2-1-54
TRCD G.J.K. DATE 9-30-54
CKD. D.M.D. DATE 9-2-54

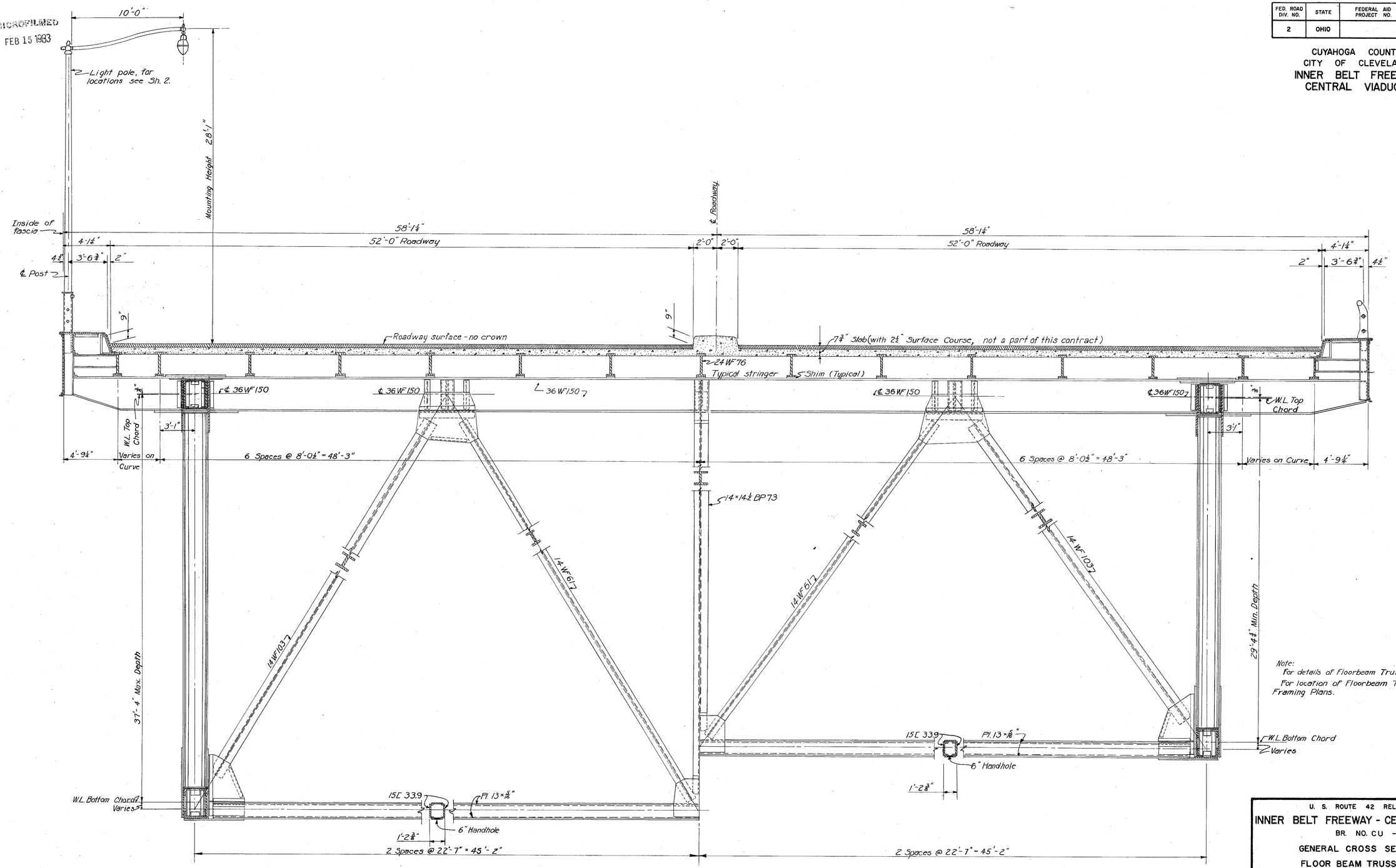
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.15

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

14
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



Note:
For details of Floorbeam Truss F2 see Sh. 30.
For location of Floorbeam Trusses see Framing Plans.

HALF SECTION

HALF SECTION

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
GENERAL CROSS SECTION
FLOOR BEAM TRUSSES F2

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 1'-0"
MADE WEG DATE 1-29-54
TRCD GJK DATE 9-21-54
CKD DMD DATE 9-22-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET-2.14

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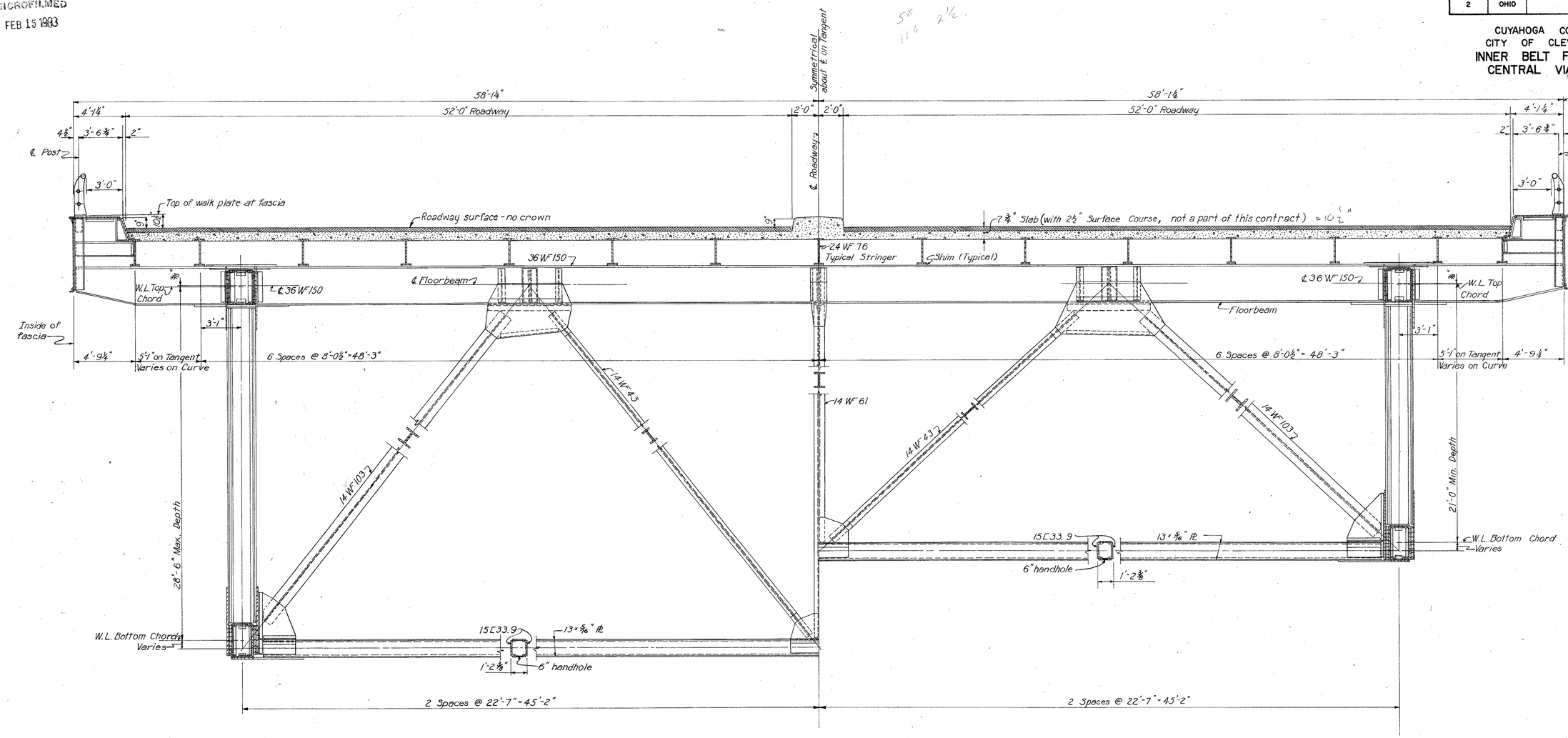
FEB 15 1983

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

13
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



HALF SECTION

HALF SECTION

Note:
For details of Floorbeam Truss F1 see Sheet 29
For location of Floorbeam Trusses see Framing Plans.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5
GENERAL CROSS SECTION
FLOOR BEAM TRUSSES F1

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 4" = 1'-0"
MADE WEG DATE 1-27-54
TRCD. GJK DATE 11-8-54
CKD. DMD DATE 11-11-54

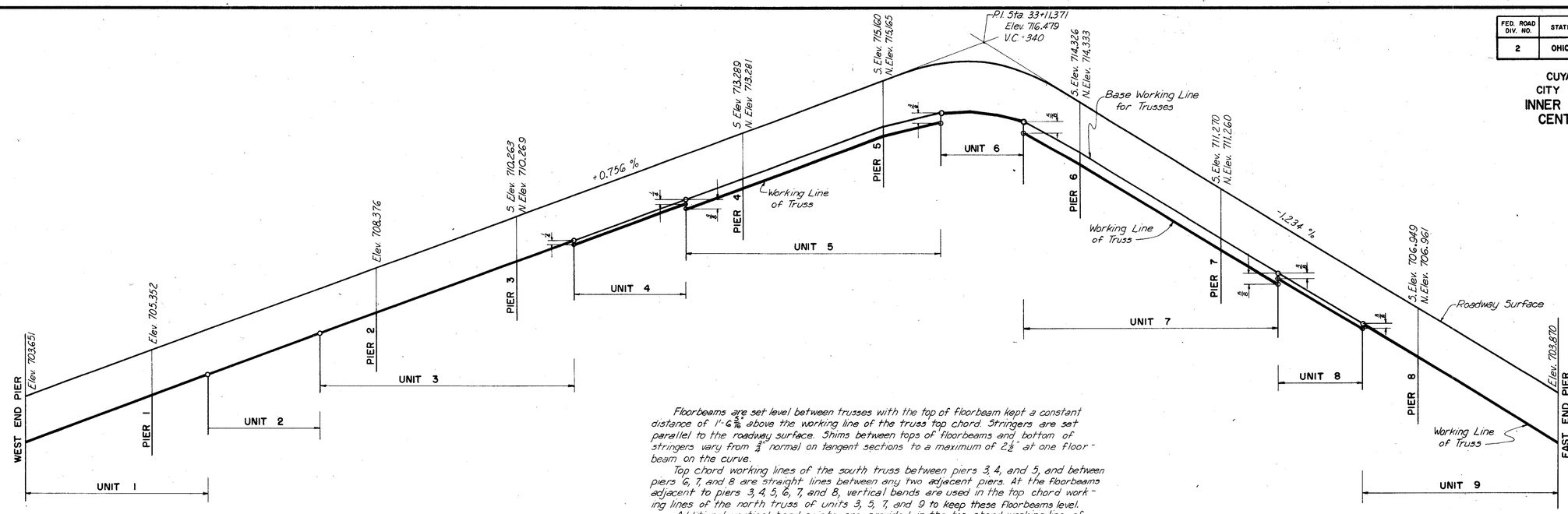
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET: 2.13

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

12
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



Floorbeams are set level between trusses with the top of floorbeam kept a constant distance of 1'-6 5/16" above the working line of the truss top chord. Stringers are set parallel to the roadway surface. Shims between tops of floorbeams and bottom of stringers vary from 3/4" normal on tangent sections to a maximum of 2 1/2" at one floor beam on the curve.

Top chord working lines of the south truss between piers 3, 4, and 5, and between piers 6, 7, and 8 are straight lines between any two adjacent piers. At the floorbeams adjacent to piers 3, 4, 5, 6, 7, and 8, vertical bends are used in the top chord working lines of the north truss of units 3, 5, 7, and 9 to keep these floorbeams level.

Additional vertical bend points are provided in the top chord working line of both trusses between piers 5 and 6 to allow for the vertical curve. See framing plans, units 5, 6, and 7.

In general, end posts and posts over piers are vertical; other posts are normal to truss top chords.

PIER	PANEL POINT	ELEVATION W.L. OF TRUSS	ELEVATION ROADWAY SURFACE NORTH TRUSS	DISTANCE R.S. TO W.L. OF NORTH TRUSS	ELEVATION ROADWAY SURFACE SOUTH TRUSS	DISTANCE R.S. TO W.L. OF SOUTH TRUSS
W. End Pier	100	699.274	703.651	4.377	703.651	4.377
	101	699.463	703.840	4.377	703.840	4.377
	102	699.652	704.029	4.377	704.029	4.377
	103	699.841	704.218	4.377	704.218	4.377
	104	700.030	704.407	4.377	704.407	4.377
	105	700.219	704.596	4.377	704.596	4.377
	106	700.408	704.785	4.377	704.785	4.377
	107	700.597	704.974	4.377	704.974	4.377
	108	700.786	705.163	4.377	705.163	4.377
Pier 1	109	700.975	705.352	4.377	705.352	4.377
	110	701.164	705.541	4.377	705.541	4.377
	111	701.353	705.730	4.377	705.730	4.377
	112	701.542	705.919	4.377	705.919	4.377
	20	701.731	706.108	4.377	706.108	4.377
	21	701.920	706.297	4.377	706.297	4.377
	22	702.109	706.486	4.377	706.486	4.377
	23	702.298	706.675	4.377	706.675	4.377
	24	702.487	706.864	4.377	706.864	4.377
	25	702.676	707.053	4.377	707.053	4.377
	26	702.865	707.242	4.377	707.242	4.377
	27	703.054	707.431	4.377	707.431	4.377
	28	703.243	707.620	4.377	707.620	4.377
	300	703.266	707.643	4.377	707.643	4.377
	301	703.432	707.809	4.377	707.809	4.377
	302	703.621	707.998	4.377	707.998	4.377
	303	703.810	708.187	4.377	708.187	4.377
Pier 2	304	703.999	708.376	4.377	708.376	4.377
	305	704.188	708.565	4.377	708.565	4.377
	306	704.377	708.754	4.377	708.754	4.377
	307	704.566	708.943	4.377	708.943	4.377
	308	704.755	709.132	4.377	709.132	4.377
	309	704.944	709.321	4.377	709.321	4.377
	310	705.133	709.510	4.377	709.510	4.377

PIER	PANEL POINT	ELEVATION W.L. OF TRUSS	ELEVATION ROADWAY SURFACE NORTH TRUSS	DISTANCE R.S. TO W.L. OF NORTH TRUSS	ELEVATION ROADWAY SURFACE SOUTH TRUSS	DISTANCE R.S. TO W.L. OF SOUTH TRUSS
	311	705.322	709.699	4.377	709.699	4.377
	312	705.511	709.888	4.377	709.888	4.377
	313	705.700	710.077	4.377	710.077	4.377
Pier 3	314	705.886	710.269	4.383	710.269	4.377
	315	706.073	710.462	4.389	710.449	4.376
	316	706.264	710.650	4.386	710.638	4.374
	317	706.454	710.839	4.385	710.827	4.373
	40	706.624	711.028	4.404	711.016	4.392
	41	706.815	711.217	4.402	711.205	4.390
	42	707.005	711.404	4.399	711.396	4.391
	43	707.196	711.591	4.395	711.588	4.392
	44	707.386	711.778	4.392	711.779	4.393
	45	707.577	711.965	4.388	711.971	4.394
	46	707.767	712.152	4.385	712.162	4.395
	47	707.958	712.338	4.380	712.353	4.395
	48	708.148	712.525	4.377	712.545	4.397
	500	708.161	712.547	4.386	712.568	4.407
	501	708.329	712.712	4.383	712.736	4.407
	502	708.519	712.899	4.380	712.927	4.408
	503	708.710	713.085	4.375	713.118	4.408
Pier 4	504	708.881	713.281	4.400	713.289	4.408
	505	709.051	713.477	4.426	713.459	4.408
	506	709.242	713.664	4.422	713.650	4.408
	507	709.433	713.850	4.417	713.841	4.408
	508	709.624	714.037	4.413	714.032	4.408
	509	709.815	714.224	4.409	714.224	4.409
	510	710.006	714.410	4.404	714.415	4.409
	511	710.198	714.597	4.399	714.606	4.408
	512	710.389	714.784	4.395	714.797	4.408
	513	710.580	714.971	4.391	714.988	4.408
Pier 5	514	710.752	715.165	4.413	715.160	4.408
	515	710.865	715.345	4.480	715.322	4.457
	516	710.990	715.482	4.492	715.467	4.477

PIER	PANEL POINT	ELEVATION W.L. OF TRUSS	ELEVATION ROADWAY SURFACE NORTH TRUSS	DISTANCE R.S. TO W.L. OF NORTH TRUSS	ELEVATION ROADWAY SURFACE SOUTH TRUSS	DISTANCE R.S. TO W.L. OF SOUTH TRUSS
	517	711.115	715.584	4.469	715.575	4.460
	518	711.225	715.642	4.417	715.636	4.411
	60	711.271	715.650	4.379	715.646	4.375
	61	711.284	715.680	4.396	715.679	4.395
	62	711.298	715.674	4.376	715.675	4.377
	63	711.239	715.633	4.394	715.633	4.394
	64	711.179	715.556	4.377	715.554	4.375
	65	711.046	715.444	4.398	715.437	4.391
	66	710.913	715.295	4.382	715.283	4.370
	701	710.614	715.111	4.497	715.092	4.478
	702	710.367	714.891	4.524	714.863	4.496
	703	710.119	714.636	4.517	714.597	4.478
Pier 6	704	709.897	714.333	4.436	714.326	4.429
	705	709.616	714.017	4.401	714.046	4.430
	706	709.304	713.712	4.408	713.734	4.430
	707	708.992	713.407	4.415	713.422	4.430
	708	708.680	713.102	4.422	713.110	4.430
	709	708.368	712.798	4.430	712.798	4.430
	710	708.056	712.493	4.437	712.485	4.429
	711	707.744	712.188	4.444	712.173	4.429
	712	707.432	711.883	4.451	711.861	4.429
	713	707.120	711.578	4.458	711.549	4.429
Pier 7	714	706.841	711.260	4.419	711.270	4.429
	715	706.562	710.940	4.378	710.991	4.429
	716	706.250	710.636	4.386	710.679	4.429
	717	705.939	710.331	4.392	710.367	4.428
	718	705.665	710.063	4.398	710.092	4.427
	80	705.649	710.026	4.377	710.055	4.406
	81	705.337	709.721	4.384	709.743	4.406
	82	705.026	709.416	4.390	709.430	4.404
	83	704.714	709.111	4.397	709.118	4.404
	84	704.403	708.806	4.403	708.806	4.403

PIER	PANEL POINT	ELEVATION W.L. OF TRUSS	ELEVATION ROADWAY SURFACE NORTH TRUSS	DISTANCE R.S. TO W.L. OF NORTH TRUSS	ELEVATION ROADWAY SURFACE SOUTH TRUSS	DISTANCE R.S. TO W.L. OF SOUTH TRUSS
	85	704.092	708.501	4.409	708.493	4.401
	86	703.780	708.196	4.416	708.181	4.401
	901	703.500	707.891	4.391	707.869	4.369
	902	703.188	707.584	4.396	707.560	4.372
	903	702.877	707.275	4.398	707.251	4.374
Pier 8	904	702.572	706.961	4.389	706.949	4.377
	905	702.269	706.646	4.377	706.646	4.377
	906	701.961	706.338	4.377	706.338	4.377
	907	701.652	706.029	4.377	706.029	4.377
	908	701.344	705.721	4.377	705.721	4.377
	909	701.035	705.412	4.377	705.412	4.377
	910	700.727	705.104	4.377	705.104	4.377
	911	700.418	704.795	4.377	704.795	4.377
	912	700.110	704.487	4.377	704.487	4.377
	913	699.801	704.178	4.377	704.178	4.377
E. End Pier	914	699.493	703.870	4.377	703.870	4.377

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5
GRADES AND ELEVATIONS
CLEVELAND CUYAHOGA COUNTY OHIO

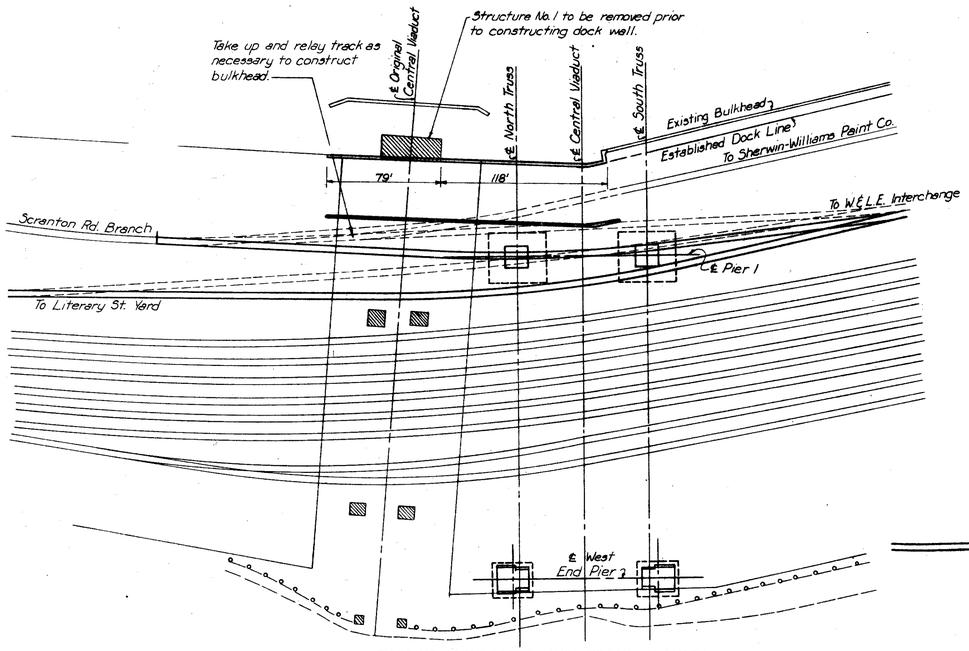
SCALE None
MADE GRB DATE 4-16-54
TRCD. DATE
CKD. C.J.C. DATE 4-29-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.12

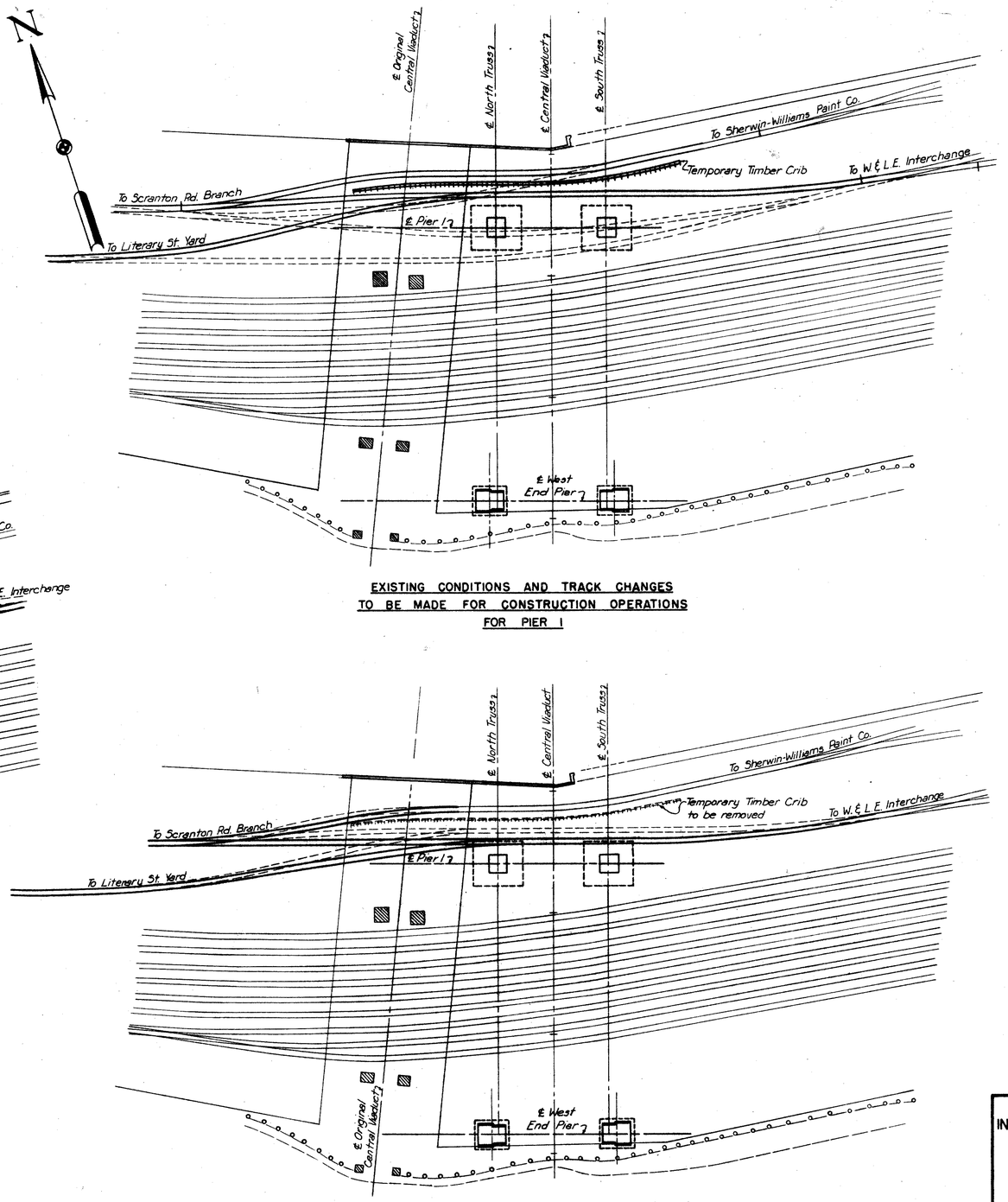
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO	TYPE FUNDS
2	OHIO		

11
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



EXISTING CONDITIONS AND TRACK CHANGES
TO BE MADE FOR CONSTRUCTING
STEEL BULKHEAD



EXISTING CONDITIONS AND TRACK CHANGES
TO BE MADE FOR CONSTRUCTION OPERATIONS
FOR PIER 1

CONSTRUCTION CONDITIONS AND
PERMANENT TRACK RELOCATIONS

LEGEND

Present tracks to be undisturbed.

Present tracks to be removed.

Track relocations.

Information for track location was taken from Erie Railroad Company drawings D-194, D-195, and D-196. Revised Aug. 13, 1954

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17.5

ERIE RAILROAD TRACK MODIFICATIONS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 30'-0"
MADE N.A.M. DATE 4-16-54
TRCD N.A.M. DATE 4-30-54
CKD G.A. DATE 8-30-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

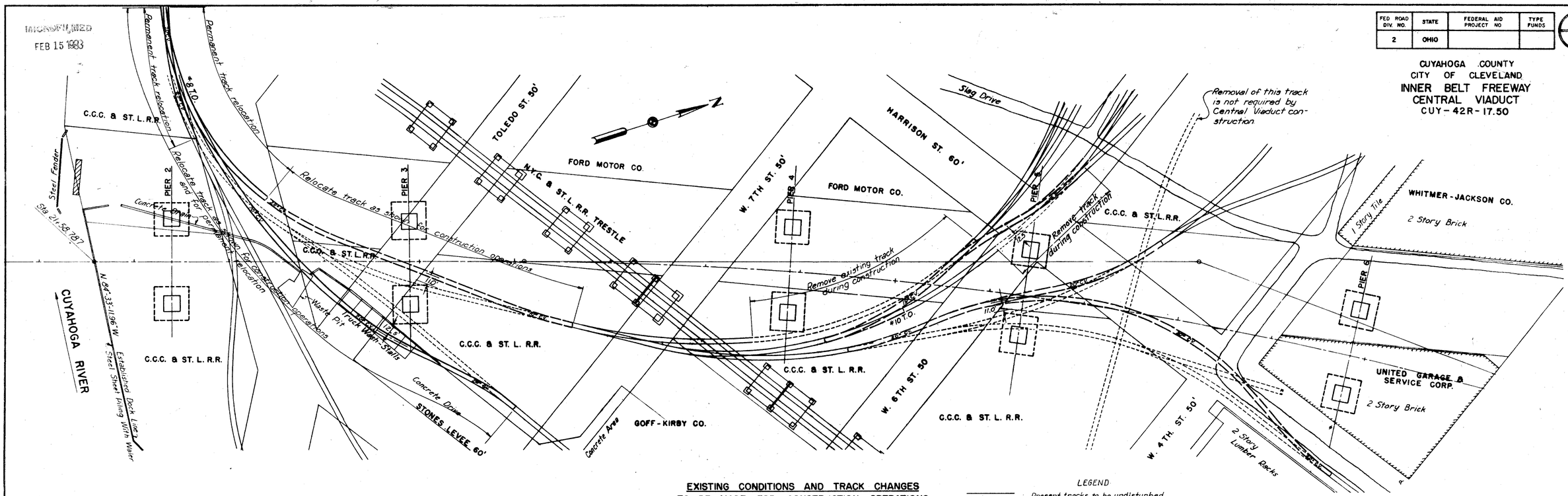
914-1A SHEET 2.11

FED ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO	TYPE FUNDS
2	OHIO		

10
122

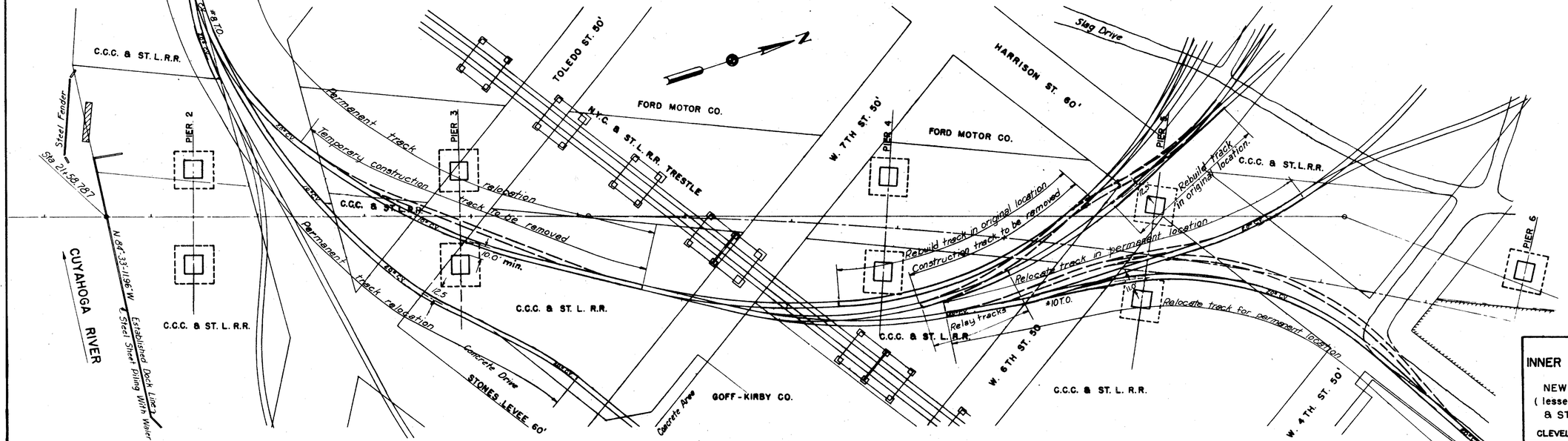
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY-42R-17.50

EXISTING CONDITIONS AND TRACK CHANGES TO BE MADE FOR CONSTRUCTION OPERATIONS



LEGEND
- Present tracks to be undisturbed.
- Present tracks to be removed.
- Track locations for construction conditions.
- Permanent track locations.

CONSTRUCTION CONDITIONS AND PERMANENT TRACK RELOCATIONS



PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CUY-42R-17.5
NEW YORK CENTRAL RAILROAD COMPANY
(lessee of the railway and property of the C.C.C. & ST. L. R.R.) TRACK MODIFICATIONS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1"=50'
MADE N.A.M. DATE 4-12-54
TRCD. N.A.M. DATE 4-13-54
CKD. G.A. DATE 4-15-54

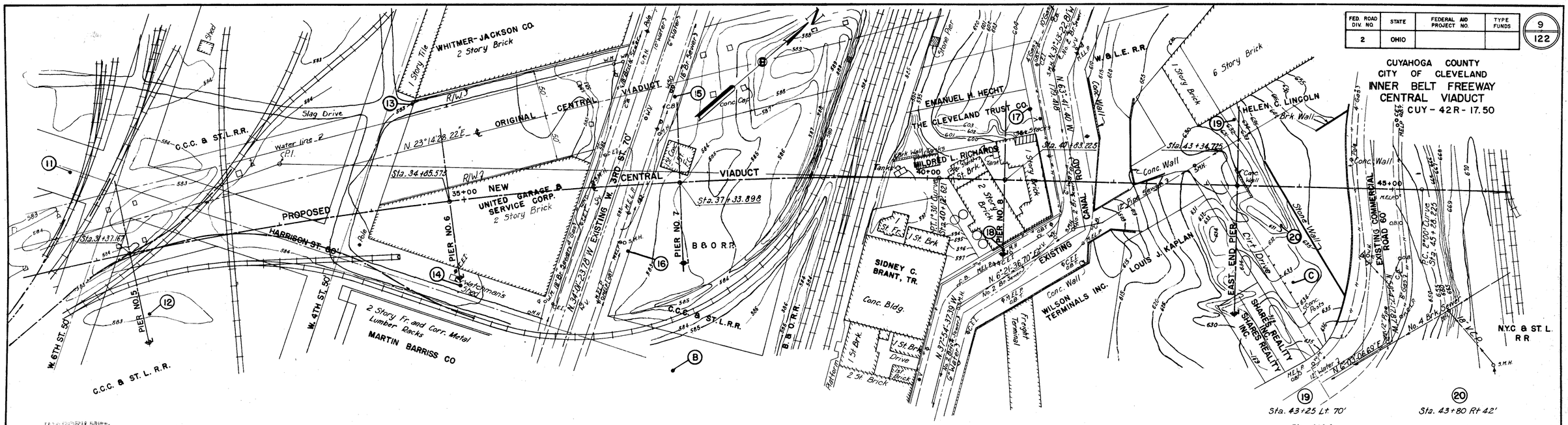
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET- 2.10

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

9
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42R - 17.50



(11) Sta. 30+92 Lt. 100'

Elev. 583.3

3	Cinder	577.3	Mucky, Wet 575.3
5	Medium		
2	Soft & Veg	560.3	
2	Soft		
2	Soft & Fine Sand	545.3	
3	Fine, Wet	541.3	
9	Coarse	531.3	
8			
11	Stiff		
14			
15		503.3	
15	Stiff		

(12) Sta. 31+40 Rt. 68.5'

Elev. 582.8

5	Miscl.	575.8	
5	Medium		
5	Med & Veg	564.8	
2	Very Soft		
2		547.8	
2	Wet		
4		536.8	
16	Very stiff		
15		506.8	
15			
15	Very stiff		

Elev. B = 492.8

(13) Sta. 34+55 Lt. 110'

Elev. 584.6

2	Miscl. Cinder, etc.	577.6	Muddy, Wet 576.6
5	Med & Veg.		
5			
5			
3	Soft & Veg	552.6	
3	Very soft	545.6	
2	Coarse, Wet		
11		528.6	
6	Wet		
12	Stiff	519.6	
10			
12	Stiff		

Elev. B = 504.6

(14) Sta. 34+85 Rt. 90'

Elev. 584.3

7	Cinder	580.8	
4	Mucky, Wet	575.3	
3	Soft & Veg.		
3			
4	Soft		
6	Medium	547.3	
4	Soft		
4	Fine, Wet	537.3	
7			
7	Med, Wet		
7	Coarse Wet	510.3	
6	Medium	498.3	
7	Coarse		496.3
6	Medium	485.8	
10	Coarse	482.3	
10	Coarse	470.3	
19	Very stiff	460.8	
Sample taken with Bailer	Fine, Wet	441.3	
	Soft	436.3	Fine 435.3
29	Very stiff		

No Sample: Too Thin & Too Fine

Elev. B = 431.8

(15) Sta. 37+34 Lt. 90'

Elev. 581.8

	Miscl. Wet @ 5'	574.8	
2	Soft, Sand	569.8	
3	Veg. Matter	566.8	
3	Soft, Veg.	553.8	
3			
3	Soft with Clay	545.8	
4	Coarse, Wet	540.3	
7	Stiff	530.8	
9			
15	Stiff	519.5	
8	Medium		
11	Stiff		
9			

Elev. B = 491.8

(16) Sta. 33+75 Rt. 70'

Elev. 582.4

3	Miscl.	577.4	Med, Wet 576.9
3	Soft with Vegetation		
3			
3			
6	Medium	546.4	
9	Wet	542.4	
14	Stiff		
15		522.4	
15	Stiff		
19	Very Stiff	502.4	
19	Very stiff		

2 (c)

(17) Sta. 41+10 Lt. 75'

Elev. 604.1

8	Miscl. (Cinder, Crush)	593.1	
6	Brn. Moist	589.1	
9	Fine, Wet	583.1	
10	Stiff		
10	Stiff, silt layers	568.1	
11	Stiff		
11			
12			
18	Very stiff	527.1	
18	Very stiff		

Elev. B = 524.1

(18) Sta. 40+83 Rt. 80'

Elev. 598.7

	Miscl.	588.2	
3	Fine	583.7	
2	Fine	579.7	
7	Med. with Veg.		
10	Stiff		
5	Soft Plastic		
5			
9	Medium	538.7	
19	Very stiff with thin silt layers		
16		518.7	
17	Very stiff		

(19) Sta. 43+25 Lt. 70'

Elev. 633.3

3	Miscl.	631.3	
7	Brn. & Loam		
—	Fine, Loam Hand Packed	624.8	
6	Moist	618.3	
6	Medium		
14			
13	Stiff		
15			
17	Very Stiff		
19			
13	Stiff	566.3	
8	Medium Plastic		
9			

15 — Elev. B = 549.3 — Very Stiff

(20) Sta. 43+80 Rt. 42'

Elev. 631.5

5	Misc.		
5	Sand & Brick, Wet		
6	Grey Sand		
4	Loose Sand & Gravel	601.5	
5		593.5	
15	Stiff, thin silt layers	584.5	
14	Stiff		
8	Medium Plastic		
5	Soft Plastic	553.5	
19	Very stiff		Thin silt layers

Elev. B = 551.5

Notes: For general notes on borings and soil and boring legend, see Sheet 7.
Vertical scale for borings: 1" = 20'.
For existing conditions legend, see Sheet 6.

PART 3

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO CU - 42R-17.5

EXISTING CONDITIONS AND TEST HOLE BORINGS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50', 20'
MADE J.G.S. DATE 1-13-54
TRCD R.K.H. DATE 1-19-54
CKD F.G. DATE 2-26-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

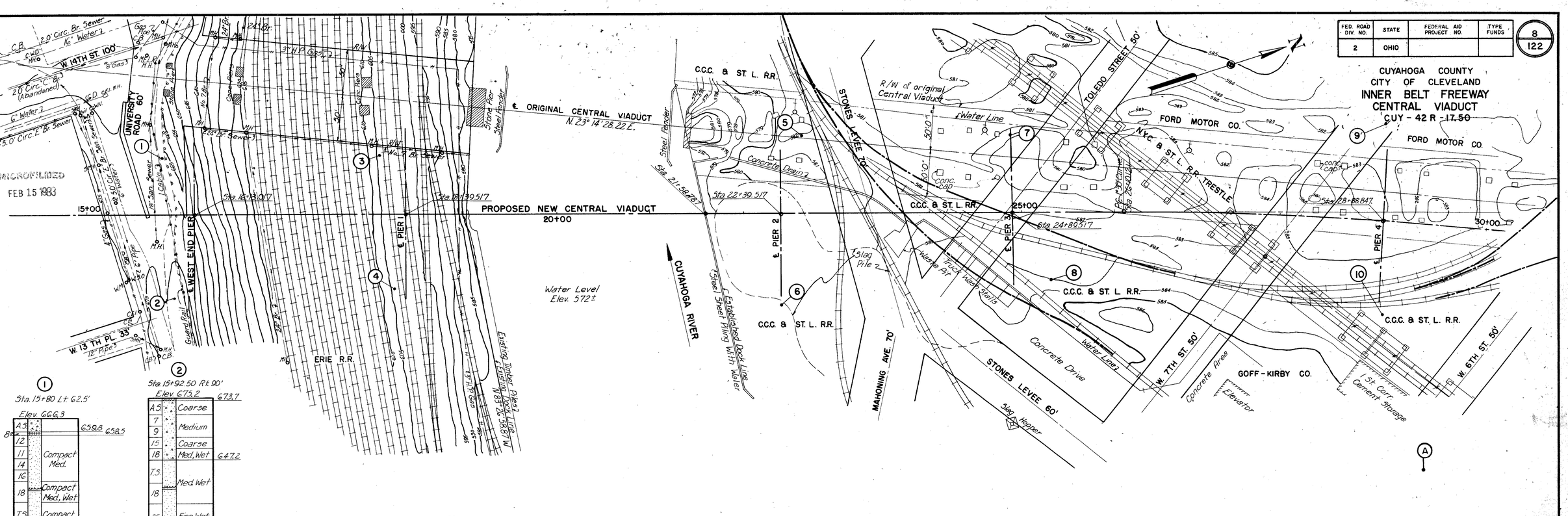
914-1A SHEET- 2.09

105

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

8
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



① Sta. 15+80 Lt. 62.5'

Elev. 666.3

8 A.S.		659.8
12	Compact Med.	658.5
11		
14		
16		
18	Compact Med, Wet	
T.S.	Compact Fine, Wet	
21		615.0
11	Stiff	
6	Medium	
16		
18		
15	Very Stiff	
15		
20		

Elev. B = 546.3

② Sta 15+92.50 Rt. 90'

Elev. 675.2

A.S.	Coarse	673.7
7	Medium	
9		
15	Coarse	
18	Med, Wet	647.2
T.S.	Med Wet	
18		
35	Fine, Wet	
T.S.	Fine, Wet	617.2
9	Stiff	612.2
13		
14	Very Stiff	
9		
9	Medium	
16		
19	Very Stiff	

Elev. B = 545.2

③ Sta 18+11.50 Lt. 6.4'

Elev. 604.0

4	Cinder & Slag	592.0
7	Fine, Brown	
8		578.0
6	fn Grey, Wet	573.0
6	Med Grey	
14	Very Stiff	
9	Stiff	
7	Medium	
14		
15	Very Stiff	
12		
17	Very Stiff & Stoney	
9	Stiff	
7	Medium	482.5
T.S.	Coarse & Wet	

Elev. B = 474.0

④ Sta 18+27.50 Rt. 80'

Elev. 604.2

	Cinder	591.7
5	Fine, Brown	585.2
12	Grey	578.0
8	Medium	572.2
6	Soft	
7	Medium	
11	Stiff	
11		
17	Very Stiff	
11	Stiff	
25	Hard Stoney	
26		
25	Very Stiff	
11	Stiff	486.2
T.S.	Coarse, Wet	475.2
22	Very Stiff with Thin Silt Layers	461.7
T.S.	Wet	

Elev. B = 454.2

⑤ Sta 22+62 Lt. 85'

Elev. 581.5

	Miscl.	577.5
3	Loam	574.5
4	Wet	570.5
7		564.0
T.S.	Med. Wet	
T.S.		
T.S.	Coarse, Wet	548.5
9	Stiff	538.5
7	Medium	528.5
8		
8	Medium	
12	Stiff	
15	Very Stiff	
9	Stiff	479.5
37	Hard	468.0
9	Medium	457.5
T.S.	Coarse, Wet	453.0
50 (9")	Hard	447.5 446.0
50/0	Hard	443.0
50 (8")	Hard	428.0

50 (10") Grey Shale

Elev. B = 427.0

⑥ Sta 22+40 Rt. 100.5'

Elev. 580.6

		575.1
A.S.	Brown Wet @ 8.5'	569.6
2	Soft	
7	Medium	559.1
8	Coarse	548.1
T.S.		
9	Stiff	538.6
9		
11	Stiff	
12		
18	Very Stiff	

Elev. B = 500.6

⑦ Sta 24+89 Lt. 85'

Elev. 581.9

3	Sand, Cinder & Clay	
4	Brown Clay	573.4
2	Loam, Wet	569.9
2	Fine, Wet	563.9
2	Fine, Wet	559.6
4	Med Wet	
T.T.	Wet	548.9
12	Stiff with Thin Silt Layers	
13		
8	Med with Thin Silt Layers	518.9
9	Medium	
12	Stiff	501.9
12	Stiff	

⑧ Sta 25+30 Rt. 75'

Elev. 583.0

	Slag & Clay	579.0
4	Loam, Fine, Wet	574.0
6	Medium	568.0
2	Fine, Wet	564.0
5	Fine, Wet	558.0
6	Wet	
7.5		544.0
14	Stiff with Thin Silt Layers	
13	Stiff with Thin Silt Layers	524.0
20	Very Stiff	514.0
16	Very Stiff	
14	Stiff	

Elev. B = 503.0

⑨ Sta 28+85 Lt. 105.5'

Elev. 582.0

4	Miscl., Cinder (etc)	576.0
3	Soft, Wet &	
5	Med. with Vegetation	565.0
2	Soft	560.0
2	Soft Little Clay	
2		552.0
4	Wet & Gravel Loose	
6		533.0
19		
22	Very Stiff	
19		
13	Stiff	

Elev. B = 502.0

⑩ Sta 28+94 Rt. 104.5'

Elev. 583.3

4	Miscl.	575.3
6	Brn & Grey	
10	Med. Veg.	566.3
2		
2	Very Soft	
2		
2		548.3
6		
T.S.		531.3
16		
15	Very Stiff	
15		503.3
15	Very Stiff	

LEGEND

Sewer M.H. Brick M.H.
R/W
Sidewalk
Curb
Guard Rail
Boring ①
O.B.T.
Gas Valve
Western Union M.H.
Water M.H. Valve
to Hydrant
Temporary Track Relocations

Notes: For general notes on borings and soil and boring legend, see Sheet 7.

PART 3

U. S. ROUTE 42 RELOCATION

INNER BELT FREEWAY - CENTRAL VIADUCT

BR. NO. CU - 42 R - 17.5'

EXISTING CONDITIONS AND TEST HOLE BORINGS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE 1" = 50, 20'
MADE J.G.S. DATE 1-12-54
TRCD. R.W.D. DATE 2-11-54
CKD. C.J.C. DATE 2-25-54

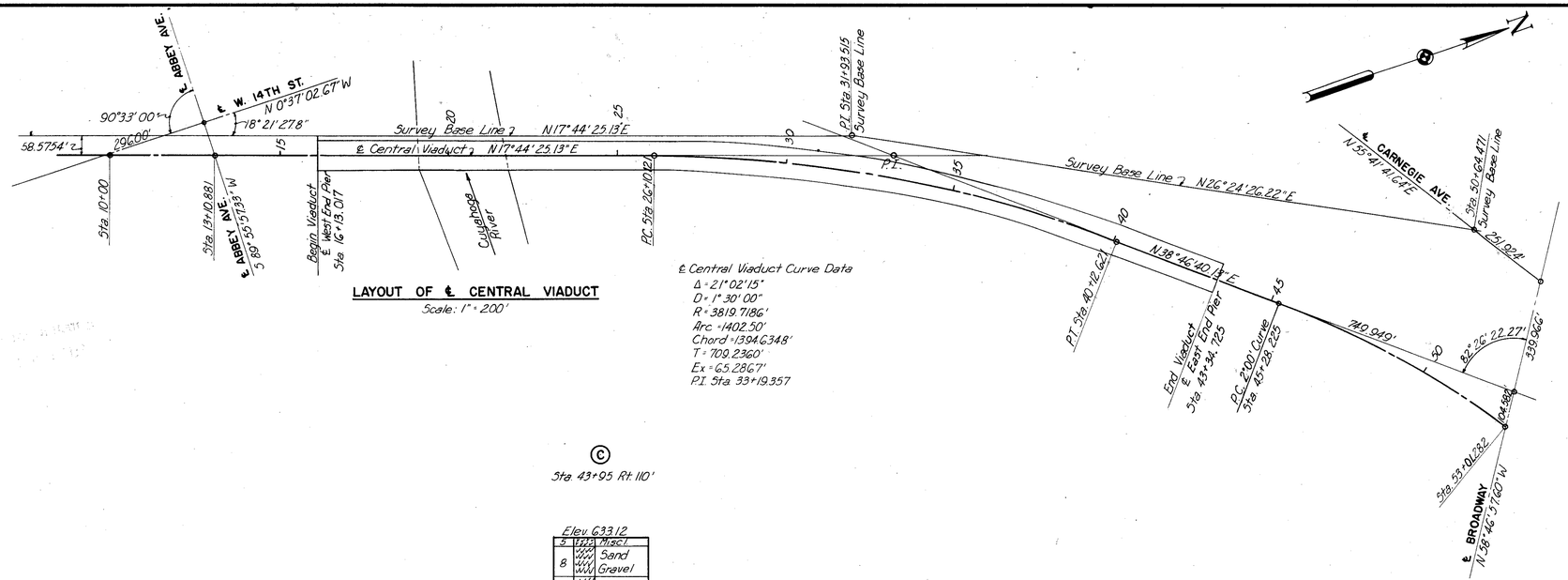
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.08

104

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

7
122

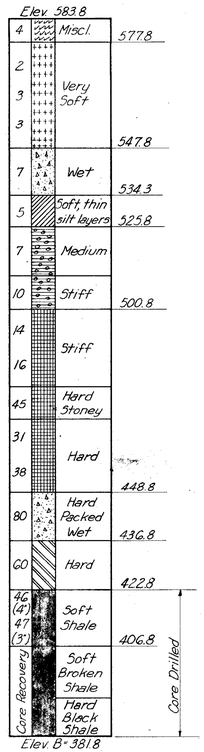
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT
CUY - 42 R - 17.50



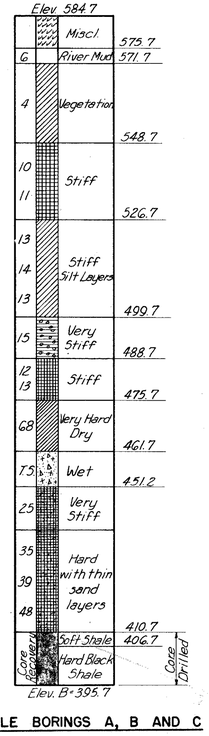
LAYOUT OF ℄ CENTRAL VIADUCT
Scale: 1" = 200'

℄ Central Viaduct Curve Data
Δ = 21° 02' 15"
D = 1° 30' 00"
R = 3819.7186'
Arc = 1402.50'
Chord = 1394.6348'
T = 709.2360'
Ex = 65.2867'
P.I. Sta 33+19.357

Ⓐ
Sta. 29+53 Rt 265

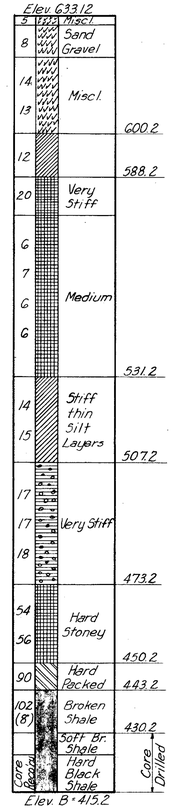


Ⓑ
Sta. 37+10 Rt 205'



TEST HOLE BORINGS A, B AND C

Ⓒ
Sta. 43+95 Rt 110'

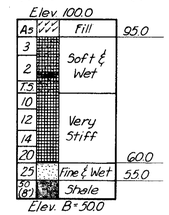


GENERAL NOTES

SOIL LEGEND

Miscl.	
Fill	
Clay	
Sand	
Silt	
Silty Sand	
Silty Clay	
Sandy Clay	
Pebbly Clay	
Sand and Gravel	
Silt, Sand and Gravel	
Sand, Clay and Gravel	
Rock	
Ground Water	
Trap Sample	T.S.
Auger Sample	A.S.
Tube Trap	T.T.

BORING LEGEND



With reference to above example;
1. In column (a) the figures 2, 3, etc. are the hammer blows required to advance the casing one foot unless otherwise noted.
2. Column (b) shows the legend of soil types and ground water elevation.
3. Column (c) shows soil classification. Elev. 100.0 is the ground level and Elev. B = 50.0 is the bottom of the boring.
4. Column (d) shows the intermediate elevations of limits of different soil layers.

Miscl. Notes: Vertical scale for boring 1" = 20'.
All samples taken with Split Type Tube, 2"O.D. x 1.5" I.D. and 4" steel casing unless otherwise noted.
Hammer wt. 140# Average Fall 30".

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R - 17.5
GENERAL LAYOUT AND
TEST HOLE BORINGS
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE Vertical: 1" = 20'
MADE LG.S. DATE 1-27-54
TRCD. W.A.M. DATE 2-6-54
CKD. C.J.C. DATE 2-25-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.07

106

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

6
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

ESTIMATED QUANTITIES

	ITEM	DESCRIPTION	TOTAL	UNIT	PROJECT IN GENERAL	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	AS BUILT	
	S-1	Class "C" Concrete	7,280.1	Cu. Yds.		869.5	540.1	1,197.9	540.2	1,186.0	409.7	1,189.7	405.8	941.2		
	S-4	Reinforcing Steel	2,324,480	Pounds		279,192	170,930	383,408	171,730	378,565	129,320	382,258	128,565	300,512		
*	S-7	Structural Carbon Steel	~~15,000,000~~ 15,011,600	Pounds		1,790,000	1,080,000	2,470,000	1,060,000	2,610,000	840,000	2,460,000	830,000	1,860,000	C-10, 18,320 C-1, 30,120	15,011,600
*	S-7 & Special	Structural Manganese Steel	~~9,660,000~~ 9,594,001	Pounds		1,130,000	640,000	1,990,000	620,000	1,770,000	310,000	1,680,000	310,000	1,210,000	C-10-88,644 C-1, 22,665	9,594,001
	S-8	Field Painting Structural Steel and Drainage System	~~25,733,000~~ 25,646,771	Pounds		3,080,000	1,765,000	4,670,000	1,725,000	4,580,000	1,152,000	4,350,000	1,181,000	3,230,000	C-10-86,229	25,646,771
	S-9	Copper Water Stops including 1" hot poured joint sealer, Sec. M-10.23	2,592	Lin. Ft.		324	108	540	108	432	108	540	108	324		
	S-9	1" Preformed Gray Rubber Expansion Joint Filler, Sec. M-10.02	73.2	Sq. Ft.		6.1	6.1	12.2	6.1	12.2	6.1	12.2	6.1	6.1		
	S-14	Handrail (Aluminum)	5,404	Lin. Ft.		633.4	403.0	897.0	403.0	887.6	303.0	890.6	303.0	683.4		
	SS-24	Walkway grating	8,225	Sq. Ft.		1,275	350	1,610	265	1,600		1,600	265	1,260		
**	S-25	Roadway Lighting System, Part A	1	Lump Sum	1											
**(1)	S-25	Roadway Lighting System, Part B	1	Lump Sum	1											
**	S-25	Navigation Lights	1	Lump Sum	1											
	S-25	Electrical Grounds	1	Lump Sum	1											
	S-29	Copper Tubes for Sub-drainage Wearing Surface Course	738	Each		108	36	126	36	126	36	126	36	108		
***	S-29	Roadway Drainage System	~~1,073,000~~ 1,093,955	Pounds		160,000	45,000	210,000	45,000	200,000	2,000	210,000	41,000	160,000	C-10, 122,955	1,093,955

* See General Notes, Sheet 4, paragraph 8, for items included for payment.
** See General Notes, Sheet 5, paragraph 6, for division of items for payment.
*** See General Notes, Sheet 4, paragraph 7, for items included for payment.
(1) No State participation.

Revised As-Built JEP - 10-18-58

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42R-17.5

ESTIMATED QUANTITIES

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE
MADE N.A.M. DATE 6-1-54
TRCD. A.H. DATE 4-13-55
CKD. G.A. DATE 4-20-55

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.06

GENERAL NOTES, CONTINUED

ROADWAY AND NAVIGATION LIGHTING

1. GENERAL

This Specification shall govern for the materials used and for the installation of a complete series roadway and navigation lighting system for the viaduct. The type and location of lights, the circuits and the location of cables and conduits shall be as indicated on the plans. The installation for roadway lights shall be in fiber or asbestos-cement conduit. For the roadway lighting, 15,000 lumen incandescent lights are to be installed as indicated on the plans, and are to be operated on a 6.6 amp. series circuit. The navigation lights are to be 50 watt, their branch circuits are to be in rigid conduit, and are to be installed for 115 volt secondary operation through insulating transformers from the 6.6 amp. series circuit.

The Contractor shall cooperate with the Cleveland Division of Light and Power and the Cleveland Electric Illuminating Company, but he will not be required to furnish, install or connect meters, meter mounts, metering equipment or housing for same. The Contractor shall provide proper termination of loop circuits for connection to future adjacent series circuits.

The Contractor shall furnish and install lighting equipment, including all lamps, luminaires, navigation lighting fixtures, wiring, luminaire brackets, poles, expansion couplings, flexible couplings, tops of posts (bases for poles), pole cap screws, cable, all conduit for lighting circuits, and all incidentals necessary for a complete circuit installation, installed and connected for operation. The loops of lighting circuits shall be complete, and the Contractor shall furnish and install all equipment necessary for the satisfactory future operation of the circuits and for the complete operation of the lighting system, (excluding the future adjacent sections, leads, primary transformers, primary fuse cutouts, primary arresters, and primary connections to the power sources) whether specifically mentioned or not.

The lighting installation, when completed shall comply with the applicable provisions of the A.I.E.E. Standards and Practices, American Standards, and National Electric Manufacturers' Association Standards, and shall conform to all local and special laws or ordinances governing such installation, and to the special requirements herein set forth. Should the plans and detail specifications be in conflict with these requirements, through error or omission, the Contractor shall call such conflict to the attention of the Engineer, and the Contractor shall make the necessary corrections in the installation as may be directed by the Engineer.

Insofar as practicable, all major items of electrical equipment such as luminaires, cable, poles, insulating transformers, etc., shall consist of products of the same manufacturer in order to secure single responsibility and most satisfactory service. Unless specifically noted otherwise, all electrical equipment shall be equal to the best grade of that type of equipment as manufactured by the General Electric Company, The Westinghouse Electric Company, or the Line Material Company. Reference to any name, make or manufacturer's number for an article of equipment or material is intended to be descriptive, but not restrictive, and is intended to indicate the materials that will be acceptable.

A layout wiring diagram showing in general the arrangements and location of the equipment is shown on the plans. This shall be considered only as illustrative and, subject to the approval of the Engineer, the Contractor shall modify it as necessary for complete and proper construction and operation. The location of the transformers, services, conduit and luminaires shown on the plans are diagrammatic only, and may be subject to shifting as the Engineer may direct in order to conform to local conditions.

Before commencement of installation of the roadway lighting system, a complete schedule of materials and equipment proposed for installation shall be submitted for the approval of the Engineer. The schedule shall include catalogs, cuts, diagrams, drawings, and other such descriptive data as may be required by the Engineer. In the event any items of material or equipment contained in the schedule fail to comply with specification requirements, such items may be rejected.

2. MATERIALS AND EQUIPMENT

All bolts, nuts, studs, washers, pins, terminals, springs, and similar fastenings and fittings shall be, where practicable, of an approved corrosion-resisting material such as brass or bronze, or of a material treated in an approved manner to render it adequately resistant to corrosion. Hot-dip galvanizing shall be considered such approved treatment. All materials furnished shall be new, shall be of the best quality and workmanship, shall be the best standard product of a manufacturer regularly engaged in the production of this type of equipment and shall be of the manufacturer's latest approved design.

Each roadway lighting unit shall comprise a pole with a 10 ft. bracket and a luminaire similar to General Electric "Form 79-AR. Luminaires lighting the roadway shall meet the general requirements of I.E.S. Type IV distribution. Luminaires shall overhang about 6 ft. out from curb.

Light standards shall conform as nearly as possible to the specifications and Drawing W-20.35, of the City of Cleveland as to general design and finish, height, base, mast arm and dimensions. In general, the standards shall consist of a cast steel anchor base to which shall be welded a tapered steel pole. To the steel pole shall be fastened an ornamental pole top to which shall be welded a mast arm for supporting the lighting unit.

A cast steel anchor base of adequate strength and of the shape and size shown on Sheet No. 122 shall be secured to the lower end of the shaft by means of a double electric weld. To obtain this construction, the base shall telescope the shaft, and one weld shall be on the outside of the shaft at the end of the shaft and the other shall be on the inside at the top of the base.

The steel shaft of the lighting standard shall be fabricated from not less than #11 manufacturers' standard gauge. The shaft shall be formed and welded with only one longitudinal, automatically electrically welded joint and shall have no horizontal joints or welds. The weld shall be of full penetration. After forming and welding, the tapered shaft shall be cold rolled or worked under sufficient pressure to flatten out the weld, to increase the elastic limit of the metal in the completed shaft, and to produce a true tapered tube without flat spots and a circular cross-section throughout the length of the shaft. If the shaft is fabricated by means of a brake or other process which does not utilize the cold rolling principle, it shall be fabricated from a steel sheet having a thickness of #7 manufacturers' standard gauge.

Each standard shall have a mast or bracket arm ten feet in length made of standard pipe of the size shown on the plans. The inner end of the bracket shall be welded to a cast steel head block so designed that the block can be bolted through a cast iron neck piece to a plate welded to the top of the pole to permit radial adjustment of the bracket arm. Provisions shall be made to permit passage of the concealed wires to bracket arm. The ornamental casting welded to the outer end of the bracket shall be arranged with a leveling device or "Plumbizer" for adjustment of a pendant lighting fixture and shall be tapped for 1-1/4 inch pipe connection.

Each standard shall have two 9/16 inch holes provided, where shown on Sheet No. 122. Painting shall be as specified under paragraph 20, Sheet 3.

The luminaire shall consist of a supporting hood, and external body or casing, an internal main reflector, and a refractor globe. The hood shall be made of cast aluminum and shall be tapped for 1-1/4" standard pipe. The external body or casing shall be made of cast aluminum and shall be firmly attached to the hood by means of adequate screws or bolts. The main reflector shall be made of heavy gauge aluminum sheet, Alzak finished and polished. The entire reflecting element shall be rigidly attached to the external body by means of screws or bolts.

The globes shall be supplied with a non-rusting metal supporting ring or band with clamps around the rim or flange of the globe. The supporting ring shall be so designed that broken globes can be replaced at the lamp location with the use of simple hand tools. All screws, nuts, washers, etc., which must be removed in order to replace a broken globe shall be non-ferrous and corrosion-proof. The globe supporting ring shall be attached to the reflector by means of a hinge or its equivalent on one side and a latch, thumb screw, or equivalent on the opposite side. These devices shall be so designed that with the globe in place, the latch or thumb screw can be released by hand the globe swung down and then lifted off the hinge so that the globe can be washed separately from the fixture. The design shall be such that after washing, the globe can be hooked on to the hinge and then pushed up into place against the gasket with one hand while the latch or thumb screw is tightened with the other hand. The best design shall be that which combines simplicity and ease of operation with the most effective seal between the glass globe and the reflector. Fixtures having the reflector permanently attached or "spun on" to the glass globe will not be accepted. A skeleton type mogul multiple socket shall be mounted in the hood and shall be suitable for 10,000 or 15,000 lumen 20 ampere lamps. The fixture shall produce an I.E.S. Type IV light distribution curve equal to the curve produced by the General Electric Form 79AR.

Lamps for navigation fixtures shall be 50 watt, vibration service, and for luminaires shall be 15,000 lumen, PS-40 bulbs, mogul base, as indicated on Sheet No. 122.

For navigation lighting, suspension bridge lamps shall be provided where indicated on the plans. The channel margin suspension bridge lamps shall be galvanized cast iron with 180° red fresnel lens, equipped with shock absorbing sockets, retriever chains, and similar to Western Railroad Supply Company Figure #2. The channel center pivot type suspension bridge lamps with 360° green fresnel lens shall be equipped with retriever chains, and equal to Western Railroad Supply Company Figure #11.

External parts of all luminaires shall be finished aluminum. Gaskets used for sealing the joint between globes and reflectors or casings shall be preformed cork or felt and shall be cemented in place. The fixtures as specified are precision optical devices and in order to deliver the performance required they must have the lamp filament correctly located with reference to the reflecting or refracting elements. The sockets shall preferably be solidly mounted, with the lamp filament at the correct optical center. If the manufacturer's design provides for vertical adjustment of the socket, he shall furnish a drawing showing the proper dimension to some convenient reference point, such as the lower edge of the reflector or casing, so that the purchaser can make a gauge to be used for accurately setting and locking the sockets. Refracting globes shall preferably be keyed to the supporting reflector so that they cannot be placed in any other than the correct angular location. In any event, the globes must be plainly marked to indicate the "street side" and the "house" or "sidewalk side". All lamps used in these fixtures will be standard 20 ampere, base up. Mazda type with mogul bases and 7 inch light center.

Lamp sockets used in enclosed fixtures of the types specified are subjected to high temperatures and the sockets furnished shall be for heavy duty and shall incorporate all the latest design features available such as center spring loaded contacts, plated parts and extra heavy cast terminals, to reduce the possibility of contact troubles and welding of the lamp base to the socket shell. Each fixture shall preferably be completely assembled at the factory and shipped in a single container as a complete unit.

All the street lighting transformers will be connected with their primary windings in a 6.6 ampere 60 cycle regulated circuit, and shall be located in the sidewalk junction boxes. The secondary of the transformer for the navigation lights shall be 60 watt, 120 volt, multiple secondary and shall be equal to Westinghouse No. 348293. The secondary of the 10,000/15,000 lumen transformers will supply 20 amperes to one lamp rated 15,000 lumens. When the lamp wattage varies between 8% above and 20% below normal, the secondary or lamp current shall not vary more than 1% from 20 amperes with 6.6 amperes at 60 cycles supplied to the primary winding. Each transformer shall be given a dielectric test by the manufacturer and shall withstand 22,000 volts between primary winding and all other parts of the transformer and 1,500 volts between the secondary winding and all other parts of the transformer. Both of the above tests shall be applied for one minute, without failure. The street lighting transformers shall be, as nearly as obtainable, like that shown on Drawing No. 3863 of the Division of Light and Power of the City of Cleveland, which is the type preferred by the City and will be the criterion in judging the adequacy of the type proposed by the contractor. Individual transformers shall be furnished for each light.

Each transformer shall be supplied with a noncorrosive name plate showing the following data:
Maker's name and style or catalog number
Rating in Lumens
Primary current
Secondary current
Frequency

Conductor for Roadway lighting shall be #8 AWG solid soft drawn copper of not less than 98% conductivity and shall be coated with lead, tin, or antimony alloy. Insulation shall consist of 10/64 inch of rubber-like compound known commercially as ozone resistant type insulation. The insulating compound shall conform in every respect and shall be tested in accordance with ASTM Designation D574-46T, or the latest revision thereof. The outside jacket or sheath shall be 4/64 inch thick and shall be made of GR-M Polychloroprene (Neo Prene) sheath compound. The sheath compound shall conform in every respect and shall be tested in accordance with ASTM Designation D753-44T, or the latest revision thereof. The cable shall be shipped on reels. Each reel shall be marked "Street Lighting Cable" and marking card shall carry manufacturer's descriptive data for the conductor and insulation.

The junction boxes for branches to lights from 3" longitudinal conduit runs shall be suitably attached under sidewalk where indicated. Brass or monel screws shall hold cover tightly. The finish inside shall be hot-dip galvanizing. Boxes shall be similar to Hopes 1252 size 24 x 12 x 6, with no lugs. See Sheet 122 for an alternate welded sheet metal junction box.

Conductors on truss spans of bridge shall be in asbestos cement conduit conforming to Supplemental Specification No. W - 206.14 or in fiber conduit equivalent to Orangeburg Nocrete. The conduits shall be 3 inch inside diameter and be placed on hangers that are furnished with the structural steel and shown on Sheet 100. All conduits on the bridge shall be supported at not over 6 ft. spaces.

Conduits cross the structure transversely in span 1 and span 9, as shown on Sheets 18, 26 and 122. These four conduits shall be 2 inch diameter asbestos cement conduit conforming to Supplemental Specification No. W - 206.14 or fiber conduit equivalent to Orangeburg Nocrete.

Rigid metal conduit from junction boxes to navigation lights shall be 1 inch, National "Sherarduct" or an approved equivalent. This conduit shall be furnished with tapered threaded fittings as required.

The circuit conductors for the 110 volt multiple circuit lighting cable to the navigation lighting units shall be No. 12 AWG conductors, as specified on Sheet No. 122. The conductors at pivot type fixtures shall be No. 12 AWG, 600 V., extra flexible, ASTM Class D. The conductors shall be continuous from outlet to outlet, and no splices shall be made except within outlet or junction boxes. The conductors shall have 3/64 inch insulation and 3/64 inch Neoprene jacket.

3. CONSTRUCTION METHODS

The installation as a whole shall be carried out in conformance with the requirements herein stated and implied, and upon completion of the work shall present a neat and workmanlike finished appearance. Safe construction and operating practices meeting the requirements of the National Electric Safety Code shall be maintained. All wiring to navigation lights is to be placed in rigid metal conduit fastened by suitable clamps. Longitudinal runs of conduits on the trusses are to be placed on hangers that are furnished with the structural steel and shown on Sheet 122.

Poles shall be carefully set, they shall be vertical, and the luminaires shall be supported with brackets about 28'-1" above pavement as indicated on the plans. The careful aligning and grading of poles is considered to be an essential feature of the installation. The work shall be as nearly perfect as practicable, and no perceptible tolerances will be permitted. In order to accomplish the desired perfection of alignment of the luminaires, the poles shall be carefully aligned and welded in place.

The installation of all luminaires and wiring shall conform to the recommendations of the equipment manufacturers and the practice of the power company.

Cables shall be installed in continuous lengths without splices, from terminal to terminal. At the terminals, cable shall be spliced to the equipment leads in strict conformity with the manufacturer's instructions. Care shall be taken to insure watertight joints.

Splices shall not be made in conduits. Splices of conductors shall be made mechanically and electrically secure and flooded with solder, and wrapped in accordance with the recommendations of the manufacturer of the cable so that the insulation and the mechanical and electrical qualities of the splices shall be equal to that of the remainder of the conductor.

Conduits shall be firmly clamped to the structures to prevent rattling, shall be run in lines parallel and perpendicular to lines of structures and shall be so placed that dirt will not accumulate around them. Supports shall not be at more than 6 ft. centers. There shall be at least one inch clearance between conduits. If on a horizontal surface for over one foot, they shall clear the surface by at least three inches. Adequate approved provision for the movement of conduits shall be made wherever conduits cross expansion or fixed joints in the supporting structures. Where asbestos cement conduit is on the structures, one expansion coupling with rubber ring shall be used at least every 75 feet. Rigid conduit across expansion joints if used shall have an expansion coupling similar to O.Z. Type EX or AX as required, complete with bonding jumper, or be in flexible couplings equal to Crouse Hinds Type EC.

4. TESTS

It is anticipated that the work under this contract will be completed prior to the completion of the adjoining girder spans. The Contractor shall install the series lighting cable in the conduits to the ends of the project and leave pig tails for connection by others to the lighting circuits.

The Contractor shall furnish all equipment and appliances necessary to test the completed cable systems. A burning test will not be necessary for the street lights on the truss spans. The City of Cleveland will make a "megger" test of all circuits. It shall be the Contractor's responsibility to demonstrate to the satisfaction of the Director of Highways, that all lighting circuits are continuous and free from short circuits and unspecified grounds, that all circuits are properly connected in accordance with the applicable wiring diagrams and that the resistance to ground of nongrounded series circuits is not less than 50,000 OHMS.

In the event that the truss spans are completed ahead of the approach spans which will be in a subsequent contract, it will be necessary to provide power for the navigation lights. If this power is needed, the Bridge Contractor will furnish and install a separate circuit consisting of two number 6 wires or a low voltage cable, on each side of the bridge. Each such circuit would serve the three navigation lights on the respective side of the bridge. These temporary circuits for the navigation lights would extend to the end of the truss spans only and the Contractor would there leave pig tails for connections by others to an existing 120 volt line on University Road near the west end pier. Separate conduits would not be required for these temporary navigation light circuits as the temporary circuits would be carried in the street lighting conduits.

5. GUARANTEE

The Contractor shall be responsible for the proper performance in part and as a whole of the structural, mechanical and electrical equipment provided for the roadway and navigation lighting circuits and related parts for the period of one year after final acceptance of the work, to the extent that he shall correct at his own expense any difficulties with the operation which may arise during this period as the result of defects in material, equipment, manufacture and erection. Responsibility for such correction shall include the repair, readjustment and replacement not only of defective parts, but of other parts which may be damaged therby. The State of Ohio and City of Cleveland reserve the right to themselves to correct any such defects and the Contractor shall pay the cost thereof. The Contractor shall give a written guarantee satisfactory to the State and City to insure the carrying out of these obligations.

6. PAYMENT FOR ROADWAY AND NAVIGATION LIGHTING

Payment for the three inch diameter conduit under each sidewalk; two inch diameter conduit across the structure in spans 1 and 9; conduit attachments and U bolt hangers; junction boxes; couplings; expansion couplings; standards; base castings; mast arms; ornamental pole tops; plumbizers; and all bolts, nuts, screws, fittings, clamps and other miscellaneous accessories shall be made in a lump sum payment for Item S-25, Roadway Lighting system, Part A.

Payment for cable; flexible cables and connections; wiring; splices; luminaires; globes; sockets; lamps; lighting transformers; ballasts; clamps; tests; removing waste; and all incidentals necessary for completing the Roadway Lighting System in an acceptable operating condition shall be made in a lump sum for Item S-25, Roadway Lighting System, Part B.

Payment for conduit from the navigation lights to the junction boxes of the Roadway Lighting System; pull boxes; splicing boxes; fixtures; globes; lamps; retriever chains; bolts; wiring of the navigation lights from the secondaries of the lighting transformers located in the junction boxes of the Roadway Lighting System; fittings; couplings; splices; attachments; tests; and all incidentals necessary for the installation and satisfactory operation of the six navigation lights, shall be made in a lump sum for Item S-25, Navigation Lights.

Payment for Item S-25 Electrical Grounds, shall include all materials and work described under paragraph 18, Electrical Grounds, on Sheet 3.

GENERAL NOTES, CONTINUED

STRUCTURAL STEEL, DRAINAGE SYSTEM, AND ALUMINUM HANDRAIL

1. CHARACTER OF METAL

A. Metal not otherwise specified shall be copper-bearing carbon structural steel, In general, trusses, trussed floorbeam horizontal bottom struts at piers, and top laterals adjacent to piers shall be of a special high strength steel, known hereinafter as manganese structural steel. These special steel parts are identified on the drawings by the suffix "S". Other parts of the spans, including the entire floor system, shall be of copper-bearing carbon structural steel. All rivets and bolts shall be copper-bearing rivet steel. Pins not otherwise specified shall be cold rolled or forged. Castings not otherwise specified shall be steel.

B. Copper-Bearing carbon structural and rivet steel shall conform to Sec. M-7.4 (b) of the specifications.

C. Manganese structural steel shall conform to the following specifications:

Chemical Composition - Per Cent

	Ladle	Check
Carbon	0.28 Max.	0.32 Max.
Manganese	1.10 to 1.60	1.65 Max.
Phosphorous	0.045 Max.	0.055 Max.
Sulphur	0.05 Max.	
Silicon	0.30 Max.	
Copper	0.20 Min.	0.18 Min.

Physical Properties

	1/2" and Under	over 1/2 to 3/4" incl.	over 3/4 to 1" incl.	over 1 to 1-1/2" incl.
Thickness				
Yield Point	50,000	47,000	46,000	45,000
Tensile Strength	70,000	70,000	67,000	67,000
Elongation in 8"	18% Min.	18% Min.	19% Min.	19% Min.
Bend Test (Ratio of Bend Dia. to Thickness of Specimen)	1	1	1-1/2	2

All other requirements shall be in accordance with A.S.T.M. A6 and A7. All parts of manganese structural steel shall be identified by paint marks and stamping at the mill, and these identification marks with some characteristic painting shall be retained throughout the work of fabrication, so that there shall be no mistakes in the use of manganese structural steel parts where required.

D. Steel castings not otherwise specified shall conform to Sec. M-7.7 of the Specifications.

E. Steel forgings shall conform to Sec. M-7.5 of the Specifications, except alloy steel forgings shall conform to A.S.T.M. Specification A237-52T, Class B.

F. Wrought Iron. Wrought Iron plates shall conform to A.S.T.M. Specifications for wrought iron plates, designation A42. Wrought Iron Rivets shall conform to A.S.T.M. Specifications for wrought iron rivets, designation A152.

G. Cold rolled steel shall conform to Sec. M-7.17 of the Specifications.

H. Soft steel in bent curb plates shall conform to A.S.T.M. Specifications low and intermediate tensile strength carbon steel plates of structural quality, designation A283-52T, Grade A.

I. For materials in fixed and expansion shoes, see Sh. 97.

J. High strength bolts shall conform to Supplemental Specification No. S-207 dated 4-28-55.

K. Lead Plates under shoes shall conform to Specification M-7.14.

L. Wrought iron pipe shall be "Standard Weight", conforming to Specification M-6.10.

M. Copper-bearing steel is not required for castings, cold rolled or forged pins, or forgings, or for high-strength bolts.

N. Where wrought iron is specified for flashing, troughs, hoppers and downspouts of the roadway drainage system, Wayari R or Corten steel may be used as an alternate.

2. FABRICATION

A. Shop assemblies and camber. The trusses of the deck truss spans shall be cambered so that when erected and under full dead load they will have their normal outline with all members of the normal length shown on the plans. The lengths of unstressed members shall be so determined. Except as otherwise approved each truss shall be separately completely assembled in the shop. The chord members of each truss shall be assembled in correct geometric pattern conforming to the final outline and the holes for field rivets in the splices of the chords shall be reamed. These splices shall then be fitted with sufficient numbers of tight fitting bolts and pins to prevent any movement of the members at the splices as the chords are adjusted into cambered position. The assembly of each truss in the shop in cambered position shall be completed by addition of the web members, and the holes for field rivets in web member connections shall be reamed or drilled while the truss is so assembled. Care shall be taken to keep the centerlines of all truss members in a plane and to set the web members at their correct geometric angles with the chords.

In lieu of the complete shop assembly of each truss as specified above, alternate procedures will be considered which will provide for the assembly and reaming of truss chords and truss web members according to an approved plan which will insure accuracy of field holes and fitting of parts equivalent to that to be secured by complete assembly. In case the Contractor should desire to use such a method, complete data regarding the method to be used and precautions which will be followed to assure accuracy shall be submitted to the Engineer for approval or modification. Final approval of the exact details of the operations must be secured before the work progresses, and if not approved there shall be complete assembly of the trusses.

B. Holes in all parts of trusses, except diaphragms, and in all metal connected to the trusses through these holes shall be reamed.

All single and double story floorbeam trusses shall be completely assembled in the shop, matchmarked, and all field holes reamed. Connections for lateral bracing shall be reamed to steel templates. Floorbeam cantilevers shall be assembled with the floorbeams and the top chord, and the holes in the tension tie plates reamed.

C. Plates 36 inches wide and under shall have rolled edges. Edges of angles cut to special size shall be finished by machining or grinding. Sheared edges of steel plates in excess of 3/4" shall be planed to a depth of one quarter inch. Sheared edges of irregular shaped truss gusset plates shall be planed to a depth of one-quarter inch.

Wherever there is flame cutting of manganese steel and carbon steel gusset plates 3/4" or more in thickness, the flame cut edges shall be machined off or ground off to a depth not less than 1/4". In lieu of such machining or grinding, the flame cut edges may be flame softened or annealed, provided these operations restore the metal to substantially its original degree of hardness and other physical properties. Flame softening or annealing shall be done with suitable equipment operated by experienced operators and in general shall consist of heating with a gas flame directed at right angles to the cut surface so that the edge of the work is heated 1/8" deep along its entire length to a cherry red color visible in daylight. To demonstrate the efficiency of the flame softening or annealing, the Contractor may be required to prepare samples by flame cutting and flame softening or annealing of portions of the steel cut away, and shall test these for tensile strength, bending and for hardness, and for comparison shall prepare similar samples by machining or other methods not involving flame cutting and shall test these control samples similarly for the same qualities. The numbers of such tests shall depend upon the extent of flame cutting, and shall be made at intervals of time as the work progresses sufficient to demonstrate the efficiency and uniformity of the operations.

Details not covered by the Design Specifications for Highway Structures of the State of Ohio, shall meet the requirements of the American Association of State Highway Officials Standard Specifications for Highway Bridges, 1953.

3. ERECTION OF SUPERSTRUCTURE METALWORK

Unless otherwise required and approved for particular erection conditions, laterals shall not be riveted until after spans are swung and are supporting their own dead load weight of steel. In cantilever erection, laterals may be riveted at any time when the stresses in the chord members adjacent to the specific laterals are approximately the same as the final dead load stresses which will be in these chord members after the span is completed. Prior to riveting, laterals subject to wind loads and other stresses under erection conditions shall be connected with sufficient bolts and drift pins to provide suitably for all such possible stresses.

Should the Contractor elect to provide increased section in certain truss members or in other parts of the superstructure metalwork, for methods of erection which the Contractor may adopt, such increases of sections and parts may be incorporated in the structure, subject to the approval of the Engineer, but shall be paid for by the Contractor and will not be included in final pay quantities.

The contractor may also provide any other additional members or parts to be temporarily attached to but not permanently incorporated in the final structure for any erection purpose. All such parts shall be classed as erection equipment and falsework and shall not be included in the final pay quantities.

Should changes in any members or other portions of the truss spans, made for purposes of erection, increase the weights of the trusses, the Contractor shall calculate the camber of the structure as affected by such modifications, and shall modify the camber of the trusses as the changed conditions make necessary. The Contractor shall have full responsibility to provide the completed structure, adjusted and in correct final position. The strain in each truss member to be used in computing the camber shall be determined from the Formula $= \frac{SL}{AE}$ Where S = dead load stress in pounds, including the slab L = length of member, c-c panel points, in inches. A = 1.05 x gross area, in sq. inches. E = modulus of elasticity = 29,000,000 lb. per sq. inch.

4. GENERAL

A. Welding shall be class "A".

B. Welds shown as field may, at the Contractor's option, be made in the shop.

C. Rivets shall be 7/8 inch in diameter unless otherwise specified. In the preparation of working drawings, the spacing of rivet holes shall be made to maintain the full net section shown on the plans for all tension members. Where rivet grips exceed 6 diameters specially designed rivets or high strength bolts shall be used.

D. Drain holes of character and locations as approved by the Engineer shall be provided in metal work parts wherever water might collect and have no other means of drainage. Should it become evident after erection that sufficient drain holes have not been provided in fabrication, the Contractor shall provide additional drainage holes of character and locations as may be approved.

E. Bending of steel plates shall conform to A.A.S.H.O. 1953 Specifications; Section 2.10.29.

5. EXPANSION JOINTS

Steel castings for roadway expansion joints shall be machined on bottom surfaces which will contact supporting steel and top surfaces shall be spot faced for nuts. All sections for both sides of each joint (except for end piers) shall be shop assembled with nominal clearance of 3/4 inch between ends and roots of mating projections. While thus assembled the joint shall be checked and corrected to provide not less than 1/8 inch clearance between sides of projections and not less than 5/8 inch clearance between ends and roots of projections. All parts of roadway joints so assembled shall be matchmarked.

Roadway expansion joint castings shall be erected according to the shop matchmarking and shall be set to the longitudinal clearance required for the temperature at the time of setting, to the required grade of roadway, and to provide equal side clearance between mating projections. Holes in the supporting steel shall be drilled in the field after the castings are adjusted in final position.

Sidewalk and curb joints shall be shop assembled, corrected to provide uniform close contact between any two mating parts of each joint, matchmarked and erected to required lines and grades.

6. CURBS, SIDEWALK, FASCIA AND HANDRAIL

A. The edge of pavement and curb lines are defined on the plans. On the horizontal and vertical curves, the curb, sidewalk, fascia and handrail shall be fabricated in straight panels between floorbeams.

B. Curbs shall be formed of soft steel bent plates. The curb units thus formed shall be erected so that after the spans have deflected under the dead load of slab and steel, the curbs shall depart not more than one-eighth inch from the required line and grade shown on the plans and shall show no abrupt kinks. Vertical adjustment of the curb supports shall be accomplished by shimming on the horizontal supporting struts. Holes for rivets attaching the curb supports to the struts shall be subpunched and field reamed to provide lateral adjustment.

C. The fascia beams supported at the ends of the sidewalk brackets shall be adjusted, before the roadway slab and wearing surface are in place, so as to depart not more than one-eighth inch from the required line and grade shown on the plans, and shall show no abrupt kinks. Adjustments shall be made by reaming the connection holes.

D. The raised pattern floor plate similar and equivalent to Carnegie Multigrip floor plate, shall be field welded to the fascia, curb and supporting angles, The plates shall be furnished in sections not to exceed one floor beam panel in length. Care shall be exercised in field assembly to maintain a neat line of the edge of the plate along the top of the supporting curb, Joints shall be accurately formed, so that they may be completely filled with weld. The plates shall not be placed and attached until after the roadway slab is in place with the full dead load on the supporting steel work. The floor plate shall be neatly cut and tightly fitting adjacent to steel posts supporting the light pole units. After adjustment of the posts a seal weld shall be run entirely around the post at the surface of the plate, except adjoining access doors to junction boxes.

7. PAYMENT FOR STRUCTURAL STEEL

Item S-7, Structural carbon steel, includes all structural carbon steel, castings, forgings, rivets, bolts, shoes, roadway and curb expansion joints, curbs, walkways, stringers, beams, laterals, trusses, inspection walks (except grating), sidewalk hatches, ladders, wrought iron, lead plates, and every other item of metalwork for which payment is not otherwise provided, including shop painting of all metalwork covered by this item.

8. ROADWAY DRAINAGE SYSTEM

A complete roadway drainage system with inspection walkways and access ladders, is shown on the plans. Access is provided to the drainage collection troughs beneath the roadway surface by hatches in the sidewalk area giving access to ladders and inspection catwalks near the water collection troughs. The inspection catwalks, made up of a light grating floor between channel stringers, are hung from the roadway stringers by angle hangers. The walkway grating for these inspection catwalks and for the walks providing access to the navigation lights, shall be 1 inch grating. The grating shall be securely attached in place by field tack welding. All walkway grating shall conform to Supplemental Specifications No. 24 dated May 28, 1948.

Item S-29, Roadway Drainage System, includes the following: Perforated roadway cross drains with parts shop welded thereto; wrought iron flashing; transverse collection troughs; angle frameworks connected to the inspection walkway but supporting the transverse collection troughs; hoppers; frameworks supporting hoppers; downspouts; split collar connectors and bolts; longitudinal collection troughs; hoppers and their supports on pier tops; and all other angles and plates and miscellaneous parts required solely for the attaching and support of parts of the drainage system.

Painting of the drainage system is included in Item S-8, and shall consist of the two red lead and the two white lead paint coats specified for the structural steel except that the first red lead coat may be applied in the field to those members that require no shop fabrication.

Access ladders and the supporting frameworks of the transverse inspection walkways with the handrail and walkway stringers and bracing are included in Item S-7, Structural Carbon Steel. Walkway grating is paid for under Item S S-24.

Item S-7, Manganese structural steel, includes all manganese steel used in trusses, laterals, struts and connecting plates, including shop painting of all metalwork covered by this item.

In accordance with Sec. S-7.28 of the Construction and Material Specifications, the weight of waste material, such as is removed by burning, cutting, coping, clipping, machining, punching, drilling, etc., shall not be considered as pay weight, but material removed to form rivet and bolt holes shall be included in the pay quantity provided that only those portions of the rivets and bolts projecting beyond the holes are included. Furthermore, any thickness and weight of members in excess of that called for on the plans (due to overweight or other cause) shall not be included in determining the weight to be paid for, unless an increase in the size of a member is authorized by the Director.

9. ALUMINUM TUBE HANDRAIL

The handrail for this structure shall consist of aluminum tubes and posts mounted on the attaching brackets extending through the sidewalk plate. The horizontal members of the rail shall consist of three round tubes, with the top tube of 4-1/2 inch outside diameter and a wall thickness of 3/16 inch, and with the center and bottom tubes of 3-1/2 inch outside diameter and a wall thickness of 5/16 inch or 3" Extra Strong Pipe (3-1/2" O.D.). Each post shall be a cast aluminum curved H section with a monolithic recessed base and tubular sockets for insertion of the rails. The horizontal tubes shall be fastened in the post socket with aluminum bolts. Posts shall be attached to the brackets with steel stud bolts welded into the brackets.

Fabrication of aluminum alloy shall in general conform to the practices recommended in Aluminum Company of America's Structural Handbook, and the following specific requirements:

1. Material shall be sawed or milled.
2. Flame cutting is not permitted.
3. Material may be heated to a temperature not exceeding 400° F. for a period not exceeding 15 minutes to facilitate bending.
4. Holes in extruded alloys shall be drilled. All holes in castings shall be cored, and rail socket holes shall be reamed.
5. Welding shall be done by the inert gas shielded arc method and no flux shall be used. Welding is permitted only where specifically called for on the plans.

In handling aluminum materials in the shop and in the field every precaution shall be taken to avoid scoring or marring of the surfaces, and any such scoring or marring of the surfaces, sufficient in the opinion of the Engineer to give an objectionable appearance, shall be cause for rejection of the material. Cast parts shall have all fins, pipes or other irregularities removed. Tubing shall be seamless and uniform in quality and temper. Exterior and interior surfaces shall be clean, smooth and free from seams, slivers, laminations, grooves, cracks or other defects. End plugs shall be welded and ground smooth.

Aluminum alloy tubing shall conform to A.S.T.M. Tentative Specifications for Aluminum Alloy Extruded Tubes, Designation B235-54T, and shall be alloy GS11A, Temper T6. Aluminum posts shall conform to either A.S.T.M. Tentative Specifications for Aluminum Base Alloy Sand Castings, Designation B26-54T, Alloy SG70A, Condition T6; or A.S.T.M. Tentative Specifications for Aluminum Base Alloy Permanent Mold Castings, Designation B108-54T, Alloy SG70A, Condition T6. Aluminum bolts and nuts shall be produced from rods and bars conforming to A.S.T.M. Tentative Specifications for Aluminum-Alloy Bars, Rods and Wire, Designation B211-54T and shall be alloy CG42A, Temper T4. Aluminum bolts for attaching rails to posts shall be Semi-finished Regular Carriage Bolts. Aluminum nuts shall be Hexagon Semi-finished Regular Nuts. Threads shall be American Standard Coarse Thread Series Class 2 free fit. Anchor bolts shall be structural steel, and shall be galvanized. All nuts and washers for anchor bolts shall be galvanized. Aluminum alloy tubing and posts shall have no special finish. The cast aluminum posts shall be given a light sand blast finish. Aluminum materials shall have all fabrication marks and irregularities corrected after all drilling, reaming, welding or other fabrication or erection operations are completed.

Before the posts are set in place the bottoms of the posts shall receive a heavy coating of Alumilastic compound, Consistency "K", or equal, completely filling the recesses in the post base and the space between the sidewalk plate and the post-supporting bracket, Anchor bolt studs and the top of bases of posts under the bolt nuts and washers shall also be coated with alumilastic material of a heavy brushing consistency. Before the nuts are tightened the holes through the base of the post shall be filled with Alumilastic compound, Consistency "K", completely filling the bolt hole which is not occupied by the bolt. Alumilastic compound shall be as manufactured by the Parr Paint and Color Company, Cleveland, Ohio, or approved equivalent.

Erection of rails and posts shall continue successively until all of the handrail of any one unit of the structure is erected. The handrail shall then be aligned by adjustment of the steel tees to which the posts are bolted. The adjustment of the handrail shall be such that the top rail shall not depart more than one-eighth inch from correct line and grade. Handrail on curve shall be aligned in straight panels between floor beams.

The Contractor shall furnish a pattern of the cast aluminum handrail post to the City of Cleveland for use in the future replacement of damaged posts.

Payment for furnishing and placing the aluminum tube handrail complete including rails, aluminum posts, bolts, etc., shall be made at the contract unit price per lineal foot of handrail, which payment shall be complete compensation for all materials, equipment, tools, labor and all work incidental to the manufacture, fabrication and erection of the handrail. Payment will be made on the basis of the measured length of handrail between ends of handrail, measured at the top of top rail.

Payment for stud anchor bolts will be included in payment for Item S-7, Structural Carbon Steel.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU -42R-17.5

GENERAL NOTES

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE
MADE GA DATE 10-7-54
TRCD. DATE
CKD. DME DATE 2-9-55

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET- 2.04

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

3
122

CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT

GENERAL NOTES

1. DESIGN SPECIFICATIONS

"Design Specifications for Highway Structures", State of Ohio, Department of Highways, dated October 1, 1951, as revised July 15, 1952, April1, 1954, and February 1, 1955, (with a load frequency rating of CF 1200-51) are used in the design of this structure. The A.A.S.H.O. standard specifications for highway bridges, Article 3.4.8. (structural silicon steel) are used for the allowable unit sfresses in manganese structural steel.

2. CONSTRUCTION SPECIFICATIONS

"Construction and Material Specifications", State of Ohio, Department of Highways, dated January 1, 1955, as modified by notes on the plans and in the proposal, shall govern.

3. SCOPE OF CONTRACT

The work included in this contract consists of the following: furnishing and erecting the entire steel superstructure of the bridge from Sta. 16 + 13.02 to Sta. 43 + 34.72 including lead plates under shoes; shoes; steel superstructure; the bridge drainage system including downspouts, drainage troughs, hoppers, and connection to the downspouts in the pier shafts; the expansion joints; inspection walkways; ladders; the aluminum handrail, steel sidewalk and curbs; the reinforced concrete roadway slab; the navigation lighting system; the bridge roadway lighting system; and any and all other incidentals including painting of metal-work, but not including roadway surface course, necessary to complete the work, ready for use.

4. DIMENSIONS

Dimensions given are measured horizontally and at 60° F., unless otherwise noted.

5. DATUM PLANE FOR ELEVATIONS

All elevations are regional geodetic survey datum.

6. FIELD OFFICE

The Contractor shall provide a field office, in accordance with Sec. S-0.01 (b) of the "Construction and Material Specifications" as soon as possible after the award of the contract, having a minimum of 500 square feet of floor space. The office shall be of watertight construction with suitable windows and doors, properly screened, and with interior walls and ceiling finished with celotex or similar insulating board. The floor shall be double thickness. The office shall be provided with heating, lighting, and telephone facilities and shall be equipped with one desk, one camp type plan table, one camp type work table and two chairs. The Contractor shall maintain the office and services until completion of his contract.

7 BORINGS

The log of each of the test hole borings is shown in these plans.

8. TRAFFIC

Portions of this project shall be constructed under traffic and the Contractor, to the satisfaction of the Engineer, shall plan and conduct his operations so that traffic shall be maintained as herein specified.

Local traffic shall be maintained as per Sec. G-4.05, during the entire construction period. If any street is closed to traffic temporarily, work on that particular street shall be prosecuted to the fullest to allow for its reopening as soon as possible. Existing streets adjacent to the project shall remain open as long as possible and feasible.

Construction operations may interfere with traffic on existing railroad tracks. The tracks will in some cases be relocated by the owners, and in other cases will be removed. The Contractor shall coordinate his construction operations so as to interfere the least possible amount with train movements. Flagmen and watchmen shall be supplied as required by the railroads, at the expense of the Contractor.

9. MINIMUM TEMPORARY CONSTRUCTION CLEARANCE FOR RAILROAD TRACKS

The minimum temporary construction clearance for railroad tracks shall be 21' -0" vertically above top of rail and 8'-0" horizontally from centerline of the nearest track.

10. WORK IN NAVIGABLE WATERS

All construction operations in the river shall conform to the requirements or directions of the District Engineer, U. S. Army, and to the requirements of the U. S. Coast Guard. The Contractor shall notify the District Engineer's Office, Corps of Engineers, U. S. Army, seven days in advance of commencement of work in the river so that navigation interests may be notified of the presence of construction equipment and also shall notify the same office when work in the river is completed. The Contractor shall provide and maintain navigation lights and other navigation signals or facilities which may be required on temporary constructions or vessels, and shall provide and maintain navigation lights on partially or entirely completed spans for the duration of his contract, in accordance with the requirements of the U. S. Coast Guard. The Contractor shall apply for and secure all necessary Department of the Army permits for dredging and dumping and for constructing falsework or other temporary constructions in the river. The Contractor shall provide areas for disposal of excavated materials at his own expense.

11. SEWAGE

The Contractor shall so conduct his operations that the flow of all existing sewers will be maintained at all times.

12. SIGNS

In addition to the requirements of Section G-7.07. "Barricades", "Danger" and "Warning" signs, the Contractor shall display one "Please - Men Working on Road" sign, Section G-7.07, furnished by the State at each end of each zone where work is in progress and in such a position as to be visible to the traffic approaching the zone. The Contractor shall be responsible for the preservation of these signs, shall advance the signs as work progresses and shall return the signs to the state at the completion of work.

In addition to the above, the Item of "Maintaining Traffic" shall include furnishing lights, signs (other than those mentioned above), barricades and watchmen to assure the flow of traffic twenty-four (24) hours daily.

13. CONCRETE

All concrete shall be class "C".

A. The concrete roadway slabs shall be so constructed that, after completion and after removal of forms and any falsework, and after the steelwork has deflected under the weight of the concrete and wearing surface, the top surface of the roadway shall conform as nearly as practicable to the elevations and contour lines shown on the plans.

B. The roadway slabs shall, in general, be of uniform thickness between stringers. The thickness of the slab over the stringers shall vary to compensate for the deflection of the stringer due to dead load.

C. The theoretical deflections for each span are to be computed by the Contractor. The allowances to be made in screed setting to compensate for the deflections due to the dead load weight of the concrete, the asphaltic concrete surface course and the structural steel not yet in place at the time the slab is poured are to be computed; such allowances to be made above the elevations stipulated on the plans for finished pavement surfaces. Screeds may require further adjustment due to irregularities in the fabricated steel.

D. The concrete of the roadway slabs on the steel spans shall be poured in special sequence. There are shown on the plans the sequences, extent and direction of individual pours for each unit. The Contractor may submit for approval by the Engineer, alternate schemes of placing concrete slabs. The sequence of slab construction shown on the plans does not apply to the median strip.

E. Any pouring sequence may be used which adheres to the following general rules:

a. For units with one cantilever arm, pour the adjacent suspended span first, i.e.:
(1) Pour Unit No. 2 before Unit No. 1.
(2) Pour Unit No. 8 before Unit No. 9.

b. For units with double cantilever arms, pour both adjacent suspended spans first, i.e.:
(1) Pour Units No. 2 and No. 4 before Unit No. 3.
(2) Pour Units No. 4 and No. 6 before Unit No. 5.
(3) Pour Units No. 6 and No. 8 before Unit No. 7.

c. Pour the adjacent slabs on the cantilever arms of the particular unit.

d. Complete the pouring of the unit by placing the slabs on the anchor arms.

A particular sequence starting at the west end of the viaduct is shown on the plans.

The slab must be placed for the full width of the roadway for a particular pour before proceeding with the next pour. Longitudinal construction joints in the slab will be permitted only over the center stringer. Transverse consfruction joints through the slab are shown on the plans. The Contractor may provide additional transverse construction joints at other locations, conforming to the details shown on Sheet ~~114~~ 103 The Contractor's proposed general arrangement of construction joints must be approved by the Director of Highways before any slab concrete is placed.

Concrete base for wearing surface shall be finished according to Section S-1.23.

14. REINFORCING BARS

All laps in reinforcing bars at splices shall be 30 diameters of the bar.

All bars are designated on the plans by bar numbers. The bar size is indicated by the first digit of three-digit numbers and by the first two digits of four-digit numbers.

Clear distance from face of concrete to bars shall be 2 inches, except for slabs the clear distance shall be 1 inch or as shown on the plans.

15. ASPHALTIC CONCRETE SURFACE COURSE AND TYPE "C" WATERPROOFING

The asphaltic concrete wearing surface course and type "C" waterproofing are not a part of this contract.

16. SUB-DRAINAGE FOR WEARING SURFACE COURSE

The copper tubes required on the bridge deck slab, for sub-drainage will be paid for at the contract unit price each bid for Item S-29, "Sub-Drainage for Wearing Surface Course". There shall be a line of copper tubes within one foot of each expansion joint, contraction joint, and roadway drain.

The steel angles will be included in a later contract with the asphaltic concrete wearing surface course and type "C" waterproofing.

17. CLEANING AND REPAIRING SUBSTRUCTURE

The Contractor shall, without additional compensation, clean and repair any portion of the substructure which is soiled or damaged as a result of his operations.

18. ELECTRICAL GROUNDS

All parts of the superstructure steelwork and the entire roadway lighting system shall be thoroughly grounded at pier shafts. The contractor for substructure will embed in the concrete of each of these pier shafts a No. 0 solid copper wire brazed at its lower end to a steel concrete pile casing, or steel pile, and at its upper end extending sufficiently above top of concrete to provide for convenient splicing and extension by the contractor for superstructure. At each such pier shaft the trusses shall be grounded by a No. 6 copper wire bolted or brazed to the bottom chord of the truss and to the bottom casting of the shoe, and carried to connection with the ground wire extending to the foundation pile. Across all roadway expansion joints at both frusses, there shall be provided a No. 6 stranded tinned copper wire suitably looped to allow for expansion of the steelwork, and connected to each side of the expansion joint by bolting or brazing so as to provide an effective electrical connection for grounding the entire structural steelwork.

Payment will be made under "Item S-25, Electrical grounds".

19. PAINTING

Painting of supersfructure metalwork shall be according to Item S-8 of the Construction and Material Specifications except as modified herein.

A. Coats of Paint. The paint shall be applied by brushing in four coats as follows:

a. A first coat of red lead paint applied in the shop on clean metal surfaces prepared for painting as specified in Sec. S-8.03.

b. A second coat of red lead paint applied in the field after erection. For surfaces that will be inaccessible after erection, this second coat may be applied either in the shop or in the field.

c. A third and a fourth coat consisting of white lead paint. The fourth coat shall be tinted a medium shade of gray that meets the approval of the Director of Highways and the City of Cleveland.

d. Light standards and the steel parts of handrails shall be painted with a first and a second coat of red lead paint as specified for the remainder of the sfructural steel, but the third and fourth coats shall be of aluminum paint.

B. Materials

a. The paint to be used for the first and second red lead coats shall be of the following composition and properties:

Pigment		
	Red Lead (97% grade)	99.6% (minimum)
	Aluminum Stearate	0.3-0.4%
Vehicle		
	Raw Linseed Oil	35% to 50%
	*Pale Heat Bodied Linseed Oil (Z_2)	15% to 30%
	Volatile Mineral Spirits and Drier	35% (maximum)

*The acid number of this oil shall not be over 11, the color not darker than 7 (Gardiner 1933) and shall have a Wijs iodine value of 110-125.

Paint	First Coat	Second Coat
Pigment	73% (minimum)	77% (minimum)
Vehicle	27% (maximum)	23% (maximum)
Weight per gallon	21.0 pounds (minimum)	24.0 pounds (minimum)
Consistency	175 grams to 250 grams (ASTM Method D562-42-T or Federal Specification TT-P-141a, Method 428.1)	
Fineness of grind 5 (minimum)		
Drying Time		
Set to touch	6 Hours (maximum)	
Dry through	36 Hours (maximum)	

The paint shall be well ground, shall not settle excessively or cake in the container, shall be readily broken up with a paddle to a smooth uniform paint having good brushing properties. The paint when brushed on a clean, smooth steel panel maintained in a vertical position, shall dry to a smooth uniform finish free from roughness, grit, unevenness, streaking, separation, running, curtaining and sagging.

For contrast between the first and second coats, the second coat shall be tinted with lampblack-in-oil to change its color to a chocolate brown.

b, The white lead third and fourth coats of paint shall conform to Sec. M-9.6 (b) of the Construction and Material Specifications.

c. The aluminum third and fourth coats of paint shall conform to Sec. M-9.12 of the Construction and Material Specifications.

20. GRAVEL

If gravel is used as the coarse aggregate it shall meet the requirements of Section M - 3.93 of the Construction and Material Specifications

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

GENERAL NOTES

CLEVELAND CUYAHOGA COUNTY OHIO

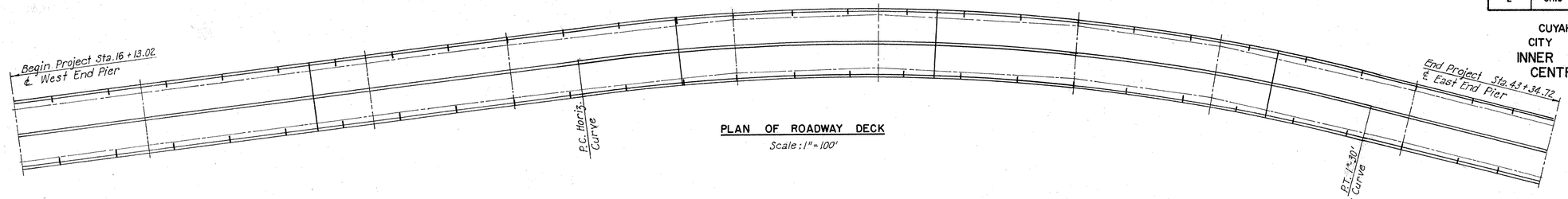
SCALE
MADE G.A. DATE 10-6-54
TRCD. DATE
CKD. DATE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK
914-1A SHEET 2.03

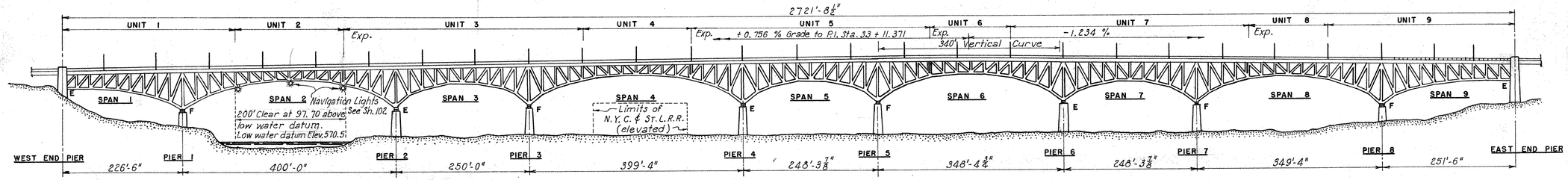
FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

2
122

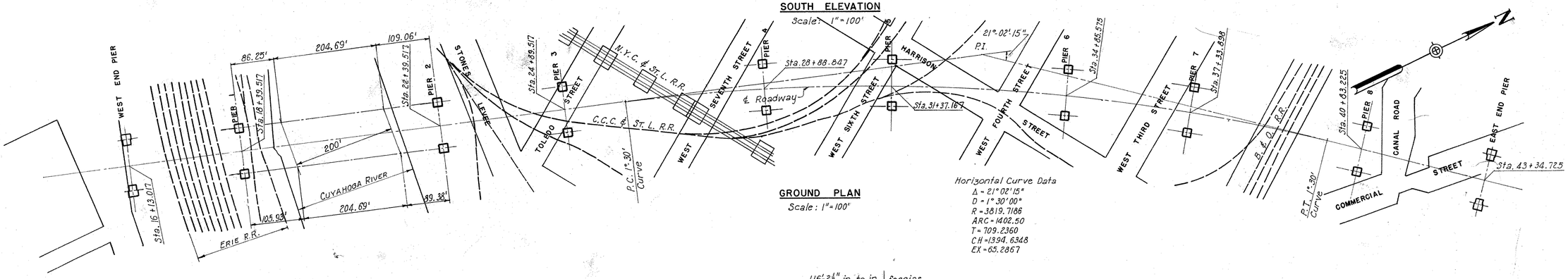
CUYAHOGA COUNTY
CITY OF CLEVELAND
INNER BELT FREEWAY
CENTRAL VIADUCT



PLAN OF ROADWAY DECK
Scale: 1" = 100'

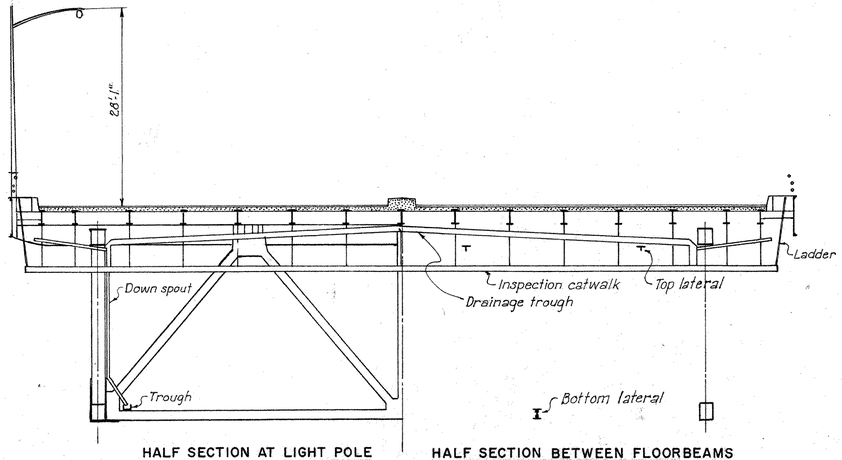


SOUTH ELEVATION
Scale: 1" = 100'

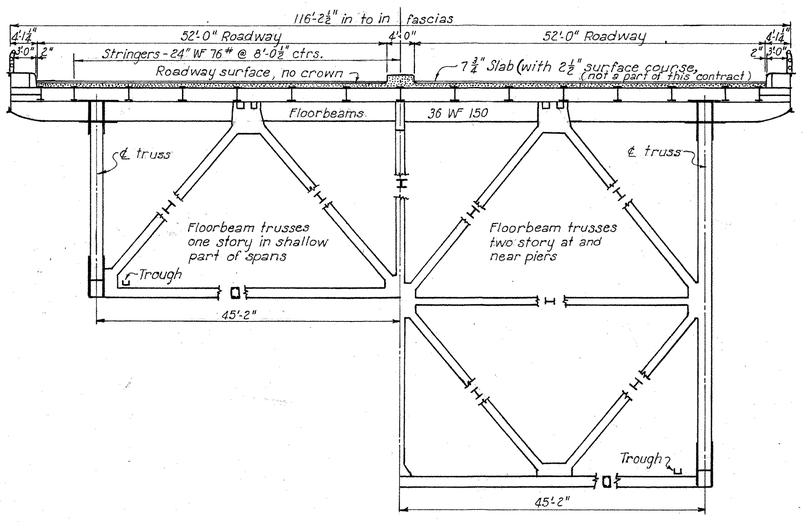


GROUND PLAN
Scale: 1" = 100'

Horizontal Curve Data
Δ = 21° 02' 15"
D = 1° 30' 00"
R = 3819.7186
ARC = 1402.50
T = 709.2360
CH = 1394.6348
EX = 65.2867



HALF SECTION AT LIGHT POLE — HALF SECTION BETWEEN FLOORBEAMS
Scale: 3/32" = 1'-0"



HALF SECTION IN SHALLOW SPANS. — HALF SECTION NEAR PIERS.
Scale: 3/32" = 1'-0"

Work included in this contract:
1. All superstructure above tops of piers.
2. Roadway lighting system.
3. Navigation lights.
4. Roadway drainage system.

PART 3

U. S. ROUTE 42 RELOCATION
INNER BELT FREEWAY - CENTRAL VIADUCT
BR. NO. CU - 42 R-17 5

GENERAL PLAN AND ELEVATION

CLEVELAND — CUYAHOGA COUNTY — OHIO

SCALE As shown
MADE NAH, JM DATE 3-15-54
TRCD G.K.L.A.H. DATE 8-13-54
CKD DMD DATE 11-19-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

914-1A SHEET 2.02